January-February 1991

PROGRAM MANAGER

Journal of the Defense Systems Management College

PM TRAINING AND INDUSTRY

SUBJECTIVE ESTIMATES

SUSTAINING DESERT SHIELD

X, Y, AND TQM

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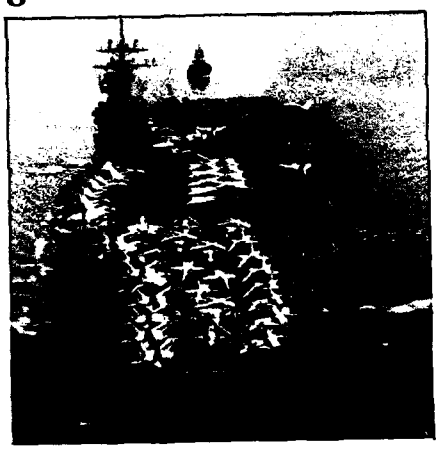

Desert Shield and the Acquisition Manager

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A RESIGNATION IN DOD

The Honorable John A. Betti

A funny thing happened on the way to getting this article to press—I resigned as the USD(A).

The statement that accompanied the announcement of my resignation included the following:

> I accepted the position of USD(A) with a strong commitment to making significant improvements in the defense acquisition process and implementing the July 1989 Defense Management Report to the President. I believed then -- and still do now -- that substantive, lasting improvements in defense acquisition will not occur overnight. Rather, it will be a long, slow and arduous process requiring patience and constancy of purpose.
>
> We have made real progress in redirecting and strengthening the acquisition process, in large measure due to the dedication and diligence of the outstanding men and women in the acquisition workforce. I hope that the momentum which has begun will continue, and that all of the Department's customers -- from the soldier in the field to the taxpayer -- will gain the greatest value from their investment in national defense.

When I was appointed as the Under Secretary of Defense for Acquisition, I stated my belief that real change is not only possible but necessary if we are going to meet the future defense needs of this country. I continue to be convinced that the key to effecting lasting change is continuous process improvement. Those improvements must be directed toward an acquisition process that is characterized by program stability, individual accountability, and overall trust among *all players* in the acquisition system. Increased program stability, accountability, and trust are not just ideas. They are the foundation upon which the acquisition system must be built.

In the statement I made before the Senate Committee on Armed Services during my confirmation hearing on 3 August 1989, I offered my views on what "success" would look like in a few years. I said that

> ...change is a continuous process and the real results of our efforts may not be evident in major programs until more than a decade from now. But having said that, I hope that by the end of this term, we will have an acquisition process that is more organized, orderly and responsive to the needs of the nation. Consistent with the Packard Commission recommendations, the intent of the Goldwater-Nichols Act, the Defense Acquisition Improvement Act and the Defense Management Report, we will see the entire defense acquisition community working together as a team under the USD(A)'s leadership. We will have made real progress in providing the highest quality products and services to the men and women in the field -- on time and on cost. Together, we will have improved relations among Congress, DOD, and industry.

I am prepared to declare victory on this vision of success...thus far. But we still have ample opportunity for "continuous" improvement.

At that same hearing, I also described the four problems I saw in effecting change.

> First of all, impatience. We all have a prediction for quick fixes, a need to see immédiate results. But as Secretary Cheney has said, there is no silver bullet for success. Reform will be a long, slow, and arduous process.
>
> The second problem will be resistance. Defenders of the status quo are always threatened by the prospect of change. It will take consistency, constancy of purpose, tenacity, and perseverance to bring about the needed reforms.
>
> Third, parochialism. Everyone who has a stake in the process -- DOD, Congress, and industry -- must all be committed to optimizing the overall process, even when a specific solution may not be optimum from their particular viewpoint.
>
> Fourth, superficiality. We must differentiate between treating the symptoms and treating the root causes. Above all, we must be careful not to mistake activity for accomplishment.

In retrospect, it is obvious that these four problems were right on the mark. There is no reason to believe that they will not continue to be the problems that will inhibit significant improvements in the acquisition process in the future.

In spite of the impatience, resistance, parochialism, and superficiality we have faced, we have made great strides in redirecting and

strengthening the acquisition process. Over the past 16 months, we focused our energies on:

—Implementing the DAE-SAE-PEO-PM organization and chain-of command prescribed by the Defense Management Report

—Improving the discipline in the acquisition decision-making process

—Reducing the non-value added time by streamlining the process

—Increasing accountability in the program management chain and self-governance by defense contractors.

The past 16 months were marked by several notable efforts to improve the process. These include:

—Defense Acquisition Board (DAB) -- These efforts are directed at reducing the burden associated with the DAB review process and improving the quality of the decisions. Improvements include a reduction in the number of prebriefs, expanded role of the Program Manager, and quicker turn-around of DAB decisions. Emphasis has been placed on identification of risks and risk management and a focus on the development and use of realistic exit criteria to improve the decision quality.

—Program Executive Officer (PEO) Organization -- The Services and OSD have embraced the PEO concept which has resulted in clear, abbreviated lines of authority for managing major programs. We have the structure in place -- we now need to make it work. We have also made progress in developing a meaningful relationship between the Service Acquisition Executives and the Defense Acquisition Executive.

—Acquisition Streamlining Task Force -- This Defense Science Board effort has the overall task of reducing cost and schedule requirements on the order of 50 percent while still preserving the required performance characteristics. The Task Force will issue its final report in February 1991.

—The Defense Acquisition Workforce Improvement Act, which we influenced, will provide us opportunities to make lasting changes in how we recruit, train, and retain members of the acquisition workforce.

—The OSD and Service Test and Evaluation (T&E) community has, through a test effort, developed policies and procedures which have reduced T&E Master Plan process time within OSD to less than 40 days. They are committed to further process improvements and process time reductions.

—The consolidation of all field contract management activities into the Defense Contract Management Command has reduced the number of government/contractor interfaces, enhanced the interaction and effectiveness of the DOD oversight mission, and provided the opportunity to increase contractor self-governance without increasing the taxpayers' risk.

—Complete rewrite of DODD 5000.1 and DODI 5000.2, the fundamental documents governing defense acquisition, to streamline the process and make them more readable and implementable.

These are only some examples of the significant progress we have made in redirecting and strengthening the acquisition process. However, we still have a long way to go to make it a process that yields on time, on cost programs that serve the needs of our men and women in uniform and represent value to our taxpayers.

It has been an honor and a privilege to work with all of you in the service of our country. We have made great progress but we still have a long way to go.

Good luck and Godspeed.

MANAGING TECHNOLOGY COURSE AT U. OF PA.

Paul Giblin

Building bigger and better machines and systems isn't the answer for solving complex problems and finding new markets and products. Business always has been a mix of science and industry, but leadership requires scientists to understand forces and dynamics shaping the economic climate. "The management of technology is the management of our future...the condition of mankind and the evolution of technology are one and same," says John P. Mulroney, president and chief executive office of Rohm and Haas Corporation. To meet this challenge of managing technology the University of Pennsylvania established the Executive Master of Science in Engineering, or the ExMSE, program providing a broadening of perspectives tailored for men and women to lead our nation into the next century.

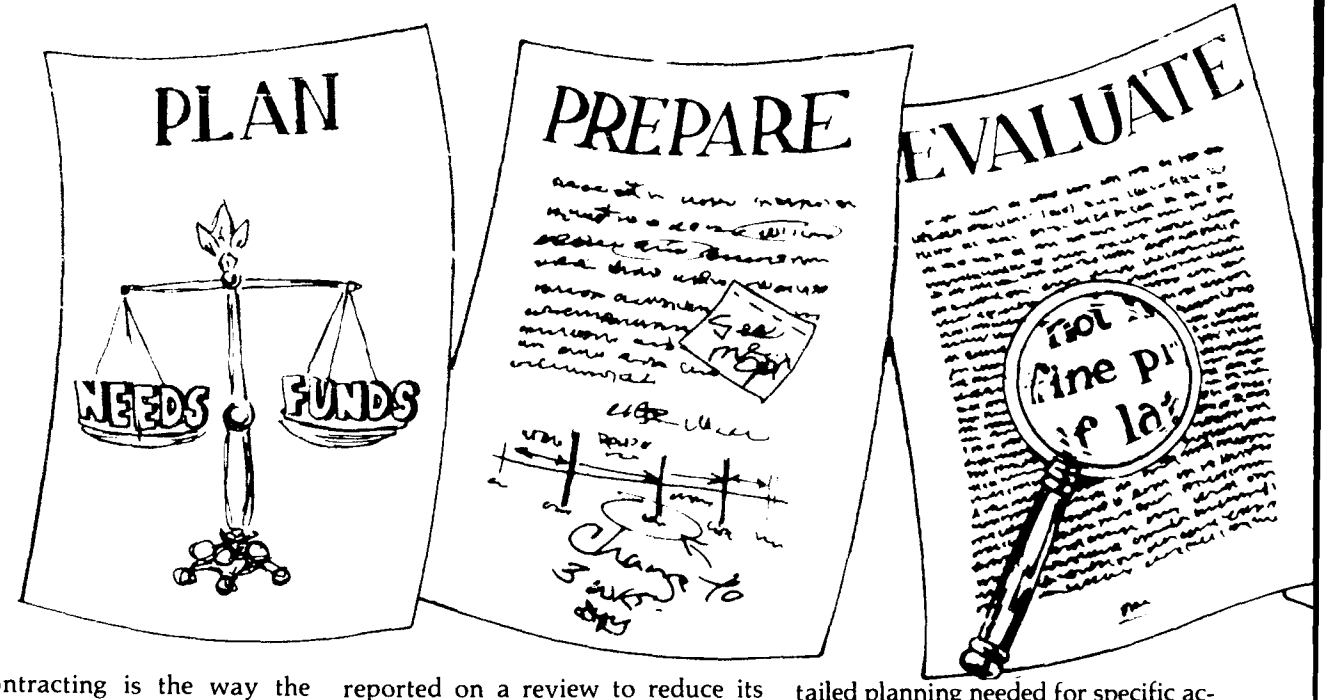
Founded 3 years ago, the program combines a knowledge base of advanced technologies and socio-economic factors, and courses reflecting sweeping changes in the world: shifts from domestic economies to a world economy, from American preeminence to international competitiveness, and from individual to multidisciplinary technologies.

Prospective candidates have full-time positions with a strong technological component in technical services, marketing, sales, research and development, managing or engineering. They have a minimum of two years experience. A background in engineering, science or mathematics is recommended. Classes are in the Penn Tower Hotel, University campus, a few blocks from Center City Philadelphia, every second Friday and Saturday from September through May. The ExMSE program requires 2 calendar years to accumulate credits required for the master degree. A one-year offering no degree is an option. For more information, call 215-898-5241.

FROM REQUIREMENT TO CONTRACT:

Overview of the Defense Systems Contracting Process

Dr. Alan W. Beck



Contracting is the way the government acquires items and services from contractors. Understanding the basic process is a key to effective acquisition management. Major activities in the process are: planning, preparing contract documents for the solicitation/contract, evaluating contractor offers to select contractors, and awarding the contract. The process has more than 60,000 pages of rules and regulations (OFPP Report to the Congress). In 1990, the Department of Defense reported on a review to reduce its 67,000 lines of text supplementing the Federal Acquisition Regulation. While all the regulations and statues require many professionals to interpret and comply, a beginner can get a fundamental perspective for the contracting process by looking into the major acitivities that take place in the process of planning and preparing for the contract award.

Dr. Beck is the Associate Dean, PMC and Academic Support Directorate, Education and Curriculum Support Department at the Defense Systems Management College.

Planning

The planning phase begins with identification of needs and funding. The Federal Acquisition Regulation (FAR) Part Seven (with supplements) prescribes the requirements for preparing acquisition plans for proposed acquisitions. This overall planning sums up or leads to more detailed planning needed for specific activity and documents required to get on contract. Key milestones for the acquisition cycle identified in the FAR are:

- —Acquisition plan approval
- —Statement of work
- —Specifications
- —Data requirements
- —Completion of acquisition-package preparation
- —Purchase request
- —Justification and approval for other than full and open competition where applicable and/or any required D&F approval
- —Issuance of synopsis
- —Evaluation of proposals, audit and field reports

—Beginning and completion of negotiations
—Contract preparation, review and clearance
—Contract award.

To transition from planning to getting paperwork ready to issue a contract requires careful translation of needs into several documents. The Statement of Work (SOW) describes the work to be done. The Specifications describe the requirement that the product or service must meet. The Contract Data Requirements List Consolidates deliverable data requirements. A purchase request package consolidates and transfers all of the requirements documents, plus funding information to the contracting specialists. It all starts with the basic question of what the contractor should do. Structure for the various elements of the project is provided by the Work Breakdown Structure (WBS).

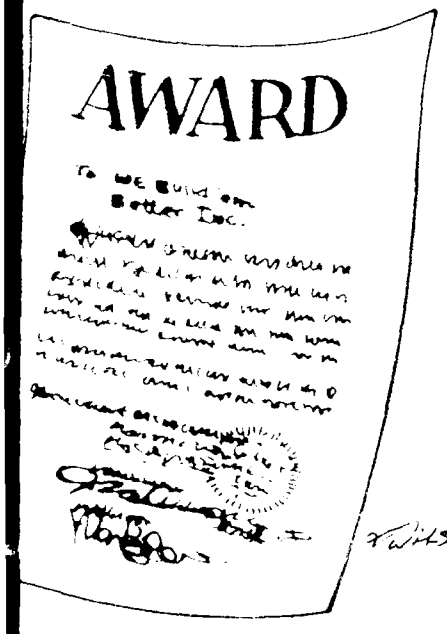
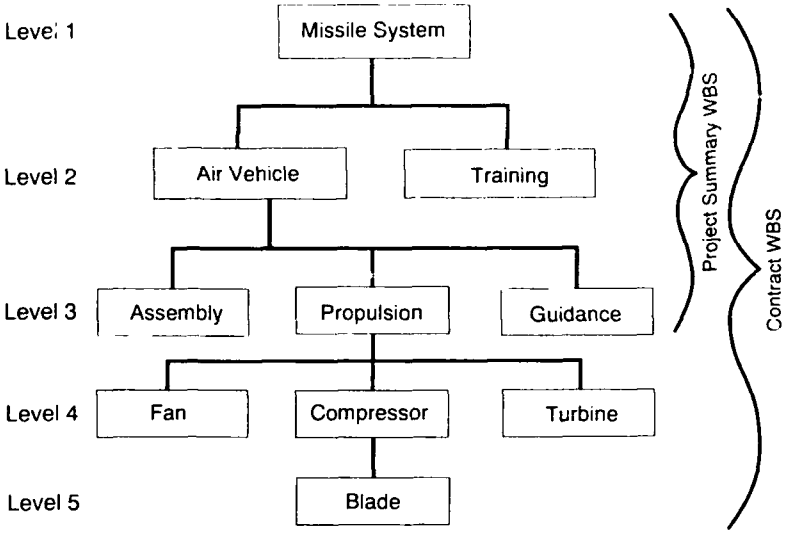


FIGURE 1. SAMPLE PARTIAL WBS



Work Breakdown Structure

The Work Breakdown Structure is an organized way to break down a project into logical subdivisions at lower and lower levels of detail. Military Standard (MIL-STD) 881A, "Work Breakdown Structure for Defense Material Items," provides standard formats to break down different types of system projects into logical components. A pictorial example of part of a WBS is shown in Figure 1.

The MIL STD 881A provides for a logical numbering of the various levels of WBS from Level 1, for the entire item, down through as many levels as it takes to identify subcomponent levels. Management frequently will focus attention at performance, summarized to the top three levels called Summary WBS if using uniform terms from MIL-STD 881A, and Project Summary if tailored to the project. The complete WBS to all levels for a particular contract is called the Contract WBS and the complete WBS to all levels for the project is called Project WBS. The WBS is useful in organizing and managing a project. Contractors use the WBS to plan and status individual work "package" effort at the lowest levels. Government cost monitors track the cost and schedule accomplishment using these work "packages."

WBS also serves as a basis for planning the contractual Statement of Work, Data Requirements List and Specifications.

Specifications

General guidance is provided in Part 10 of the FAR, "Specifications, Standards, and Other Purchase Descriptions." This policy calls for specifications to "state only the Government's actual minimum needs and be designed to promote full and open competition." More detailed guidance on the format and contents of specifications for DOD is provided in military standard (MIL STD) 490A "Specification Practices." This MIL STD provides uniform practices to prepare specifications in five specified types.

1. *Type A, System Specifications,* define mission and technical requirement, allocate functional areas and define interfaces to provide a functional baseline of specification requirements.

2. *Type B, Development Specifications,* describe performance characteristics of each configuration item, providing an "allocated baseline" of specification requirements.

3. *Type C, Product Specifications,* define form, fit, function and performance and test requirements for acceptance contributing to the "product baseline" which also includes the process and material specifications.

4. *Type D, Process Specifications.*

5. *Type E, Material Specifications.*

The specifications logically become more detailed as a program progresses from early stages of broad general Type A "System" specifications to the definitive productive specifications used in production for the rigid quality and conformance inspections on delivered hardware. This does not mean that the only way to buy production items is with

detailed Type D or Type E process or material requirements. Sometimes it makes sense to provide only Type C product specifications with functional requirements so industry has some flexibility in methods of process and material. The nature of the requirements in specification and the WBS combine to determine the level of detail and general thrust desired in the Statement of Work preparations.

The MIL STD-961C gives specific guidance on preparation of military specifications. It calls for selective 4 application and tailoring of military standardization documents or using nongovernment standards per DODD 4120.20. The preference is for stating "what-is-necessary" instead of "how to." The specifications should not include special taskings not related to product performance, such as for reliability predictions or program review reports; these would be required for delivery by the Contract Data Requirements List (CRDL) with the work requirement included in the Statement of Work.

Statement of Work Preparation

The Statement of Work (SOW) is prepared to establish and communicate nonspecification requirements for contractor effort. Military Handbook 245B, "Preparation of Statement of Work (SOW)," provides guidance for preparation of five types of SOW—depending on the program phase or nature of effort.

Type I, Concept Exploration

SOW aimed at objective as goals. Technical requirements normally result in reports.

Type II, Demonstration and Validation

Type III, Full-Scale Development

Qualitative and quantitative technical specifications are used. SOW used with specifications for various special requirements.

Type IV, Production and Deployment

Contract specification converted to military specification. SOW order nonqualitative and nonquantitative requirements. Minimal needs specified.

Type V, Nonpersonal Services Contracts

For contractor support independent of material procurement. When in-house expertise is not available.

The Statement of Work is a key to effective proposal preparation, evaluation, selection of contractors for award and contractor performance on the contract.

Responsibility for work-planning rests with those responsible for accomplishment; i.e., the program/project acquisition manager. This responsibility is identified in FAR Part 34, "Major System Acquisition," which refers, in the DOD FAR Supplement, to DOD Directives 5000.1 and .2. The FAR Part 35, "Research and Development Acquisition," provides additional guidance on Statement of Work preparation for Research and Development and on selection of the appropriate type of contract for the work to be accomplished.

The WBS is useful in structuring the SOW, for tailoring to minimal levels needed. The MIL-HDBK-245B provides detailed guidance in SOW preparation, including sample formats for each type of SOW and a list of key "work words" to help clarify the requirements.

The Statement of Work is a key to effective proposal preparation, evaluation, selection of contractors for award and contractor performance on the contract. The SOW establishes the non-specification tasks and identifies the desired work effort. As the work is performed, information that may be required for retention is developed. Since the SOW is not the contractual vehicle to require data delivery, the preparer must concurrently identify and list data requirements.

Contract Data Requirements

We "buy" or require delivery of data on Department of Defense contracts by listing the requirements on a DD Form 1423, Contract Data Requirements List (CDRL). This list tells contractors what data to deliver, when and how data will be accepted, where to look for preparation instructions, where in the contract (SOW reference paragraph) the preparation effort is required, and other information.

As the Statement of Work is prepared, the preparer(s) should keep track of tasks that would produce data that may be contracted for delivery on DD Form 1423. Policy guidance is to tailor data requirements (as in all contract requirements) to order only what is needed.

Data Call

The CDRL candidate items are developed by persons with data needs in response to the program manager's "Data Call." Most data requirements fit under standard "Data Item Descriptions" (DIDs) published by DOD and indexed in DOD 5010.12L Acquisition Management Systems and Data Requirements Control List, popularly called the AMSDL.

Data Review

Candidate data items are reviewed by a data review board or individual to check for need, duplication or potential "nice to have" but not essential cost drivers. The scrubbed-down data requirements list is finally prepared on the DD Form 1423 and double-checked with its associated SOW to ensure correct cross reference paragraph numbers. The SOW, Specifications and CDRL then form the backbone of the package which the contracting officer will need to prepare and award a contract. This contract package accompanies a funding document called a Purchase or Procurement Request (PR) and the entirety is called a PR Package.

FIGURE 2. UNIFORM CONTRACT FORMAT

Section	*Title*
A	Part I. The Schedule
B	Solicitation/contract form
	Supplies or services and prices/costs
C	Description/specification/work statements
D	Packaging and marking
E	Inspection and acceptance
F	Deliveries and performance
G	Contract administration data
H	Special contract requirements
	Part II. Contract Clauses
I	Contract Clauses
	Part III. List of Documents, Exhibits, and Other Attachments
J	List of attachments
	Part IV. Representations and Instructions
K	Representations, certifications, and other statements of offerors or quoters
L	Instructions, conditions, and notices to offerors or quoters
M	Evaluation factors for award

PR Package

The PR Package provides the contracting officer with a coordinated consolidation of requirements documentation. It forms the basis to develop a solicitation to request industry to submit offers or proposals for contracts. These solicitations are called Invitation for Bids (IFBs) if the requirement is suited to a sealed bid (low bidder) firm-fixed-price contract, or they are called Requests for Proposals (RFPs) or Quotations (RFQs) if the sealed bid method is not appropriate. To put either type of solicitation together, the contracting officer needs to collect the information required by the Uniform Contract Format (see Figure 2) as specified in the FAR. This Uniform Contract Format is used throughout the government for standardization.

The Specifications, Statement of Work and CDRL, while major inputs, provide only part of the needed information for a contract. The Uniform Contract Format outlines other requirements.

Section B is a list of deliverable supplies or services. There can be subtle strategy in whether items are grouped or separately listed and in how items are priced. At the solicitation stage, Section B will have blanks for prices; the contractor fills in these prices when sending the offer to the government.

Sections D, E, and F provide information of particular relevance to the field contract administration personnel involved in contract acceptance and payment. Sections C, H and J provide information guiding contractor performance during the contract. Section C is the place where a variety of requirements may be included, such as the CDRL or the data item descriptions. Some contracting officers even put things such as security specifications (DD Form 254) or, perhaps, even the SOW in Section J, rather than Section C.

The RFP

Part IV of the Uniform Contract Format entitled "Representations and Instructions" provides the guidance needed to tell contractors how to respond (Section L), how the offers will be evaluated (Section M), and the various adminstrative requirements such as socioeconomic program compliance (Section K).

The instructions and evaluation factors will affect the ability of the government to select the best contractor for the job. Source selection planning must be coordinated with the phase of RFP development to ensure an effective evaluation of well-organized (and not excessive) proposal information.

Other pre-RFP activities include identification of any Government Furnished Property (GFP) requirements, obtaining solid promises of resources the government must provide, drafting any Special Contract Requirements language for Section H and selecting appropriate preprinted contract clauses from FAR. Clause selection varies by the nature of the requirement (supplies, services, construction) and type of contract. Contract type is the key element controlling cost risk to the type of contract. Contract type is the key element controlling cost risk to the contracting and must be carefully selected to meet the circumstances. Hopefully, much advance thought on contract type took place during acquisition planning and SOW drafting.

Obtaining Competition

Competition where possible is U.S. policy on contracting. Planning for competition is a mandatory consideration in writing the Acquisition Plan.

Requirements should be carefully stated so as not to restrict competition. Stating goals or minimal requirements in functional terms allows for maximum contractor innovation in competing ways to meet government requirements.

Before a solicitation is released, the potential buy is publicized by printing a "synopsis" in the *Commerce Business Daily* (CBD) to notify interested firms of the nature of the buy and where to ask for the solicitation. For major systems, the potential prime firms will know of the requirement and will be working on proposal strategy before the CBD synopsis. However, for many subcontractors or suppliers and for less-complex buys, competing sources are obtained from the CBD synopsis.

Selection of a source can vary in procedure. The relatively simple sealed-bid method simply awards to

(Continued on page 13)

BACKGROUND PAPER

DESERT SHIELD AND THE ACQUISITION MANAGER

Some Aspects of Planning and Sustainment

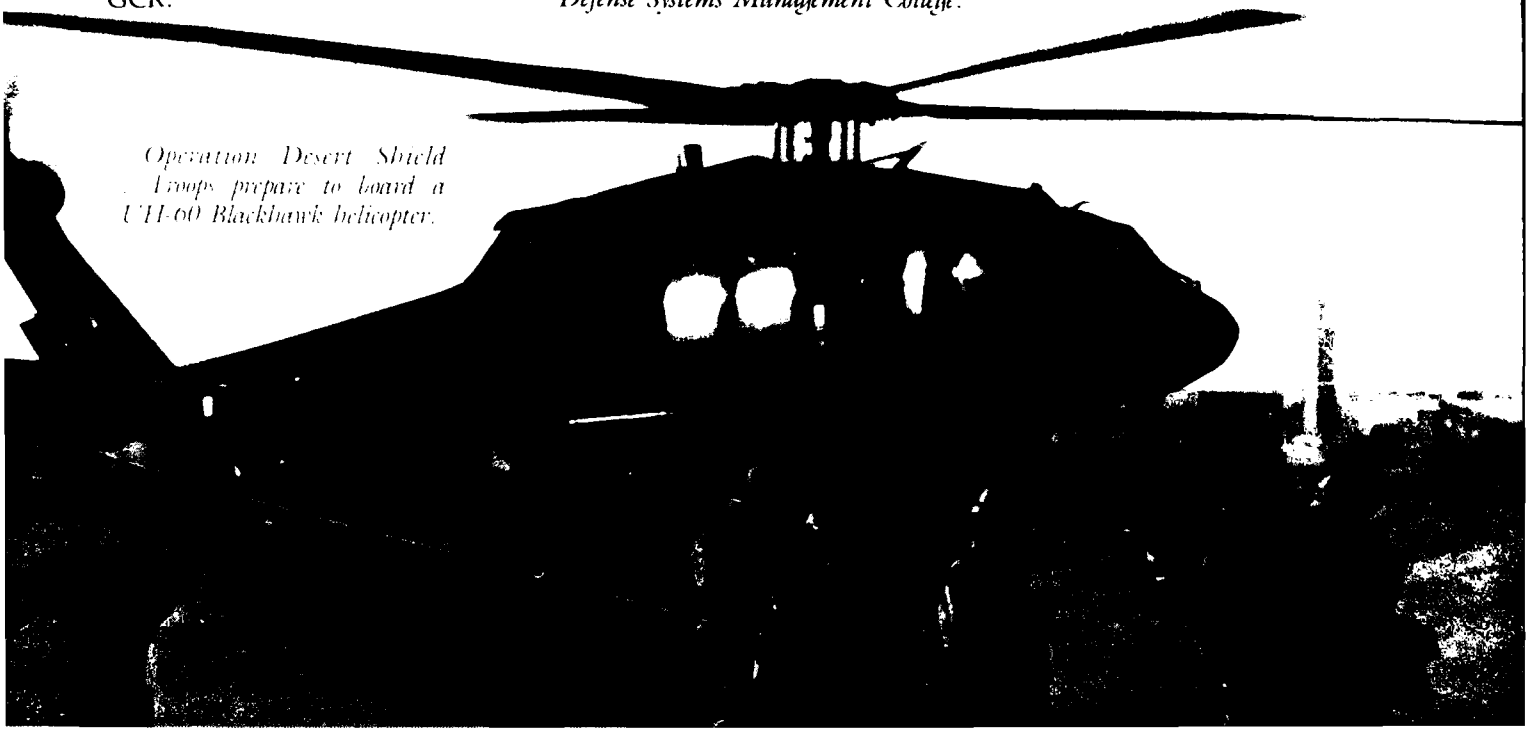
Albert M. Bottoms

The purpose of this article is to relate the logistics demands of *Operation Desert Shield* and the operational environment of that operation to the responsibilities of the military logistics community, especially to those of the acquisition community under the concepts of Graduated Mobilization/Crisis Response. This article concludes with an illustrative list of problem areas that are amenable to resolution through the application of GMR/GCR.

Desert Shield represents the largest deployment of U.S. military forces since the Vietnam conflict. Several allied countries contributed military forces with logistic support. The weapons systems that are deployed represent equipment, each with its own, unique logistic lifeline.

The logistic line of communication from the United States to Saudi Arabia is by airlift and sealift. In-country the lines of communication are airlift, road, rail, and some pipeline (for petrofuels and water). Organic resources of the U.S. Transportation Command have been augmented from the Civil Reserve Air Fleet, the Maritime Administration's Reserve Fleet, and by charter

Mr. Bottoms is the former Navy Chair, Executive Institute, at the Defense Systems Management College. These are his opinions only and do not reflect the policy or have endorsements of the U.S. Government, the Department of Defense, or the Defense Systems Management College.

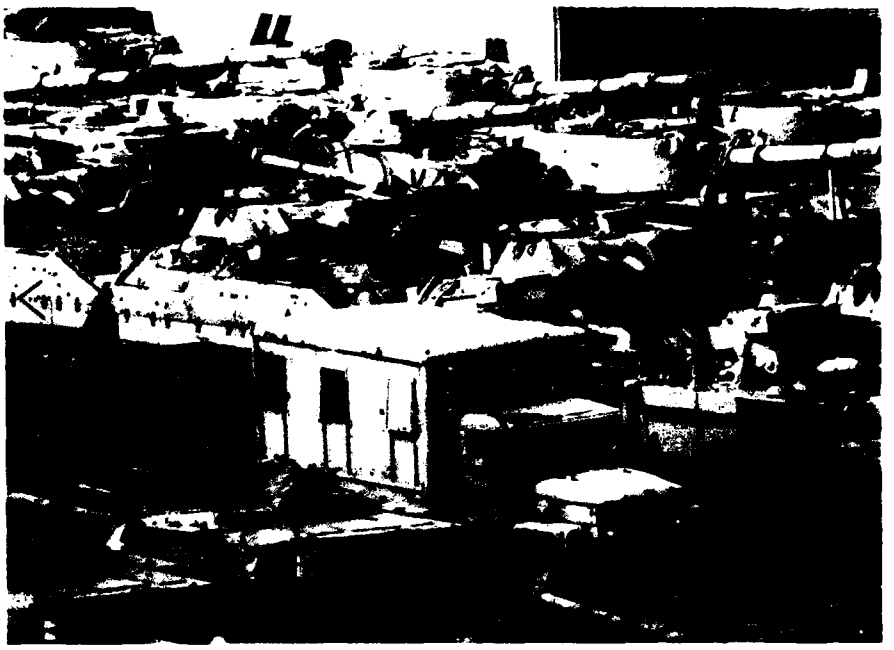


Operation Desert Shield. Troops prepare to board a UH-60 Blackhawk helicopter.

of civilian owned ships and aircraft (U.S. Flag and others).

Timelines. In considering *Desert Shield*, it is important to remember that the *perceived* threat to the Kingdom of Saudi Arabia by Iraq necessitated the rapid deployment of elements of the XVIII Corps (the U.S. ready contingency force). The force build-up in and around Saudi Arabia was very rapid. By the end of the third week of the crisis, more than 40,000 U.S. personnel from "crack" combat units were in-country. In the 14th week of the crisis (when this story was written), U.S. and Allied forces were outnumbered 2 to 1 although the Allies were thought to have technological superiority.

Distance and Environment. The prospect of operations on the Arabian Peninsula, or in Iraq, places an extreme test on U.S. ability to deploy and sustain major military forces. Depending upon the routes chosen (that, in turn, depend upon such factors as landing rights, weather, origins and destinations), the lines of communication from the United States to Saudi Arabia exceed 5000 n.mi. from the U.S. East Coast (farther by sea) and 12000 n.mi. from the U.S. West Coast. The "great circle" route from the West Coast crosses Soviet air space.



Loading USMC equipment heading for Saudi Arabia from Savannah, Georgia

As a matter of official release of the Defense Department

A Geography Lesson

The size of Saudi Arabia surprises those unfamiliar with the area. Superimposed upon a map of the United States, Saudi Arabia covers most of the U.S. East of the Mississippi River. Forces landed in Red Sea ports for service on the Iraq-Saudi front are about the same distance from their assigned destinations as would be forces landed in Pensacola or Charleston for service on the Canadian-U.S. border. Only, in Saudi Arabia, the cross-peninsula rail and road networks are much more limited.

Then, there is the operating environment. The ARAMCO recruiting brochure proclaims that Saudi Arabia is a "hot, barren land." Daytime temperatures of more than 120 degrees F are common. Radiational cooling at night can bring temperatures near freezing. The extensive desert is characterized by blowing sands with particles resembling talcum powder but with the hardness of pumice. We can recall what that type of an environment did to the helicopters of Operation Desert One (the failed operation to extract the hostages in Iran in 1980). We are learning what effect that environment is having on the effectiveness of deployed American manpower and equipment. As a part of the discipline of the deployed forces, each individual is required to drink 5 gallons of water per day; when all potential uses of water are totalled, the daily requirement is 20 gallons per individual. Imagine the water distribution problem alone.

There is another aspect of the operating environment of Saudi Arabia – the cultural environment. The Saudis are regarded as among the most fundamental followers of Islam. There are strict prohibitions on alcoholic beverages and what they view as pornography; there are strict conventions regarding roles and dress of women. All of their rules are in sharp contrast with the practices and culture of the American forces. Why are these matters significant? The Arab world is uneasy about the presence of American forces in the country that contains the holiest shrines of Islam. Should U.S. personnel unwittingly create an incident, the alliance against Iraq could be jeopardized. In turn, the necessity to maintain the morale and health of deployed personnel suggests that there must be a well-conceived rotation plan, and that sufficient manpower and material exist to support that plan.

Logistics Planning Base For Desert Shield

Operation Desert Shield is a massive military logistics operation. The capability to carry out the military deployments and to sustain the deployed forces without undue risk to U.S. national security requirements rests on the completeness and appropriateness of the military force structure including the division of responsibilities between active and reserve components of the armed forces. Strategic lift, airlift and sealift, is the component of the force structure that permits deployment. The military inventory is a component that supports that force structure with stocks in Europe and the Pacific (the overseas theaters), stocks prepositioned as in the Rapid Deployment Force elements at Diego Garcia, and stocks in the Continental United States and in strategic reserves. A

U.S. Marines loading aboard LCVs with their equipment.

third component is the defense industrial base of the United States and its Allies. The issue is the responsiveness of that industrial base to the demands that may be placed upon it to replace military inventory, or to respond to new requirements such as for lubricants or chemical protective clothing and antidotes. A key question is the timeliness of the response.

The operational cycle can be thought of as having five phases, each with important logistics implications. These are the planning phase, the selection/identification phase, the deployment phase, the sustainment phase, and the post-operation phase.

—**The Planning Phase.** Operational contingency plans are based upon forces and capabilities *in being*, the force structure. At any instant in time that force structure represents a distribution of resources among active military forces, the reserve components, the research and development efforts to modernize the military forces, and the logistics infrastructure of inventories and production capacity that sustain present and augmented forces in national security emergencies.

Each Service has evolved its functional distribution of responsibilities among the active and reserve components. Under the Army's "Total Force Concept" the reserve components are integral portions of the force and assume a large portion of the mission to provide combat support services into which logistics support operations are subsumed. The types of units that have been called to active duty for *Desert Shield*—transportation, cargo handling, communications, and medical—attest to the division of responsibility. Similar types of combat support service units have been activated by the U.S. Air Force.

The organic capabilities of the Transportation Command have been augmented by activation of the Civil Reserve Air Fleet and the reserve merchant fleet plus charter of ships and aircraft and the use of allied assets.

Shared Responsibilities

The contingency plan for *Desert Shield* is derived from earlier plans for conflict in Iran that might have involved the Soviet Union. As with any such plan, the force laydown is based on the existing force structure. The nation's force structure evolves over years in response to the perception of the most significant threats. It is scarcely surprising after 40-plus years of "cold war" with the Soviet Union that the U.S. force structure reflects the perceived Soviet threat and the needs of NATO. The force structure also recognizes the shared responsibilities with NATO and the basic strategic policy of ensuring deterrence through an aggressive "forward deployed" military policy.

A basic question about the force structure is its flexibility to meet unexpected national security situations. The congressional initiatives in the FY91 Budget concerning the adequacy of stratetgic lift, and the adequacy of cargo handling and distribution are, to some extent, force structure questions. The congressional questions concerning the utility, useability, and appropriateness of the military supplies and material deployed to Saudi Arabia are essentially force structure and force planning issues.

Graduated Mobilization Response/Graduated Crisis Response

Concepts. Briefly stated, GMR/GCR, together with the Joint Industrial Mobilization Planning Process (JIMPP), provides an orderly approach to identifying time-phased actions that can be taken under conditions of early or ambiguous warning of impending hostilities or, as in the case of the Middle East Crisis, before actual hostilities erupt. Actions so identified are those that increase readiness of active forces or that lead to improved capabilities for sustainment of existing and/or augmented forces. A key aspect is the reduction of production or deployment lead-times. The importance of the JIMPP process is that it helps to identify the critical items of military end-use items and, thus, assists in focusing resource management efforts.

The GMR/GCR and the User Community. The user community for the application and use of the principles of Graduated Mobilization/Crisis Response are the sets of individuals in the National Security community who:

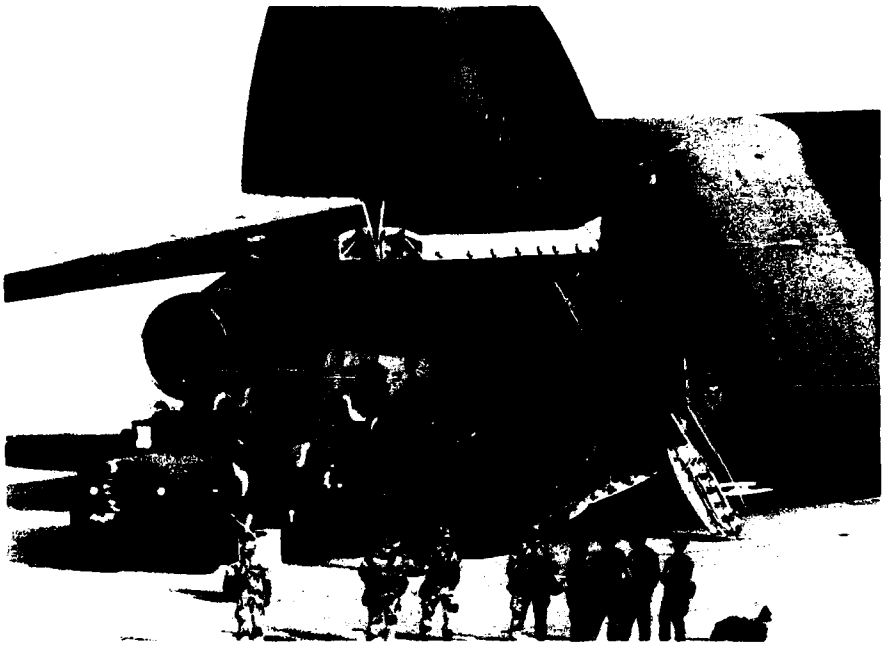
—Establish time-phased requirements for materiel

—Maintain data/information bases on production sources both domestic and foreign

—Manage the acquisition of defense materiel under normal, production surge, and sustainment conditions.

—Develop and/or implement policies and approaches that provide materiel in a timely manner and at affordable cost to meet mission needs.

In practice the above segments can be identified as the military user, the item and acquisition managers who are charged with maintaining the military inventory and responding to crisis needs, and the resource managers in the Department of Defense and in the Civil Agencies having national security emergency resource management responsibilities (including the management of financial, manpower, and agricultural, transportation and energy resources).



A Military Airlift Command C-5 cargo aircraft off-loading equipment in Saudi Arabia.

Strategic Planners

The above collection of users might be termed the "strategic planners." Implicit, therefore, in the discussion of resource management and GMR GCR is the idea that action option development begins early in a crisis cycle (under conditions of ambiguous warning) and continues through the build-up and sustainment phases and into the final or demobilization phase of an operation.

—**The Selection/Identification Phase.** The forces and capabilities in being are the bases for the Commander's operational concept as outlined in his contingency plan. That plan reflects the Commander's assessment of the enemy capability, threat, and possible intent as well as the courses of action that are available to manage the risk. The exigencies of the threat—in *Desert Shield*, the concern about an invasion of Saudi Arabia by Iraq—and the limitations imposed by sea and air lift define the time-phased selection of the types of units to be deployed, and the identification of the specific units. This time-phased deployment list, known as the "tipfiddle," defines the initial load-out and subsequent build-up.

Development of the "tipfiddle" demands the trading off of combat units, combat support service units, and expendable materiel and spares to sustain the initial phases of hostilities. The constraint is lift vs. time. The force structure has defined the options that are available in developing the "tipfiddle." The way in which the reserve components, particularly the combat support service units, train in peacetime to support the active units they are designated to support determines the effectiveness of the deployed force, and influences the identification of units for the "tipfiddle."

Decisions concerning the "tipfiddle" at this predeployment phase define (or, at least, explain) to a major extent the nature of questions concerning availability of supplies and materiel, and adequacy of cargo handling and distribution to deployed forces.

—**The Desert Shield Deployment Phase.** The assessment of the threat by Saudi Arabia and the United States of the imminence of an invasion by Iraq demanded fast initial response and rapid build-up, which continued. Initiation of the deployment ushers in the execution phases of deployment and sustainment.

Recalling Week 7

By Week 7 of the Gulf crisis, news accounts reported 170,000 U.S. armed forces personnel in and around Saudi Arabia with another 30-50,000 allied forces committed. Allied forces were opposed by some 430,000 of the estimated 1.2 million in the Iraqi armed forces, which was growing. At that stage, Iraq had not initiated military action.

With respect to logistics implications of the deployment phase, the questions relate to the executability of the deployment plan, the "tipfiddle." In that plan there were certain assumptions about the availability on a tightly prescribed schedule of airlift and sealift. In the event how well were the schedules met? This question involves more than a "box score." The heavy equipment and the bulk shipments of POL require special lift and cargo handling capabilities and facilities. Were these available in a timely fashion? Did constraints on cargo handling, reception and distribution, and the availability of appropriate lift jeopardize the security of the deployed forces? Augmentation of sealift involved the activation of ships from the reserve fleet. Did the activations meet the advertised schedules that are used in the planning process?

The "Retail" End

The deployed soldier, airman, and their units represent the "retail" end of the logistics chain. The question

here is the availability and appropriateness of what was sent and how it was distributed. Were the requirements for spares and maintenance in the desert environment adequately forecast and provided? The important thing is to identify lessons learned that may be applied to fashion the force structure and procedures for the national security environments of the nineties.

Note the relationship between the execution of the deployment phase and the fundamental capabilities that are provided by the force structure. Note also that the initial deployment phases rely entirely on the ready forces and what is in the military inventory. To the extent that shortfalls exist in spares and maintenance, in the appropriateness of lubricants, field rations, chemical protective clothes and antidotes, and the operability of weapons systems in the desert environment; such shortfalls result in questions about the force structure and military inventory and the processes that develop and manage them.

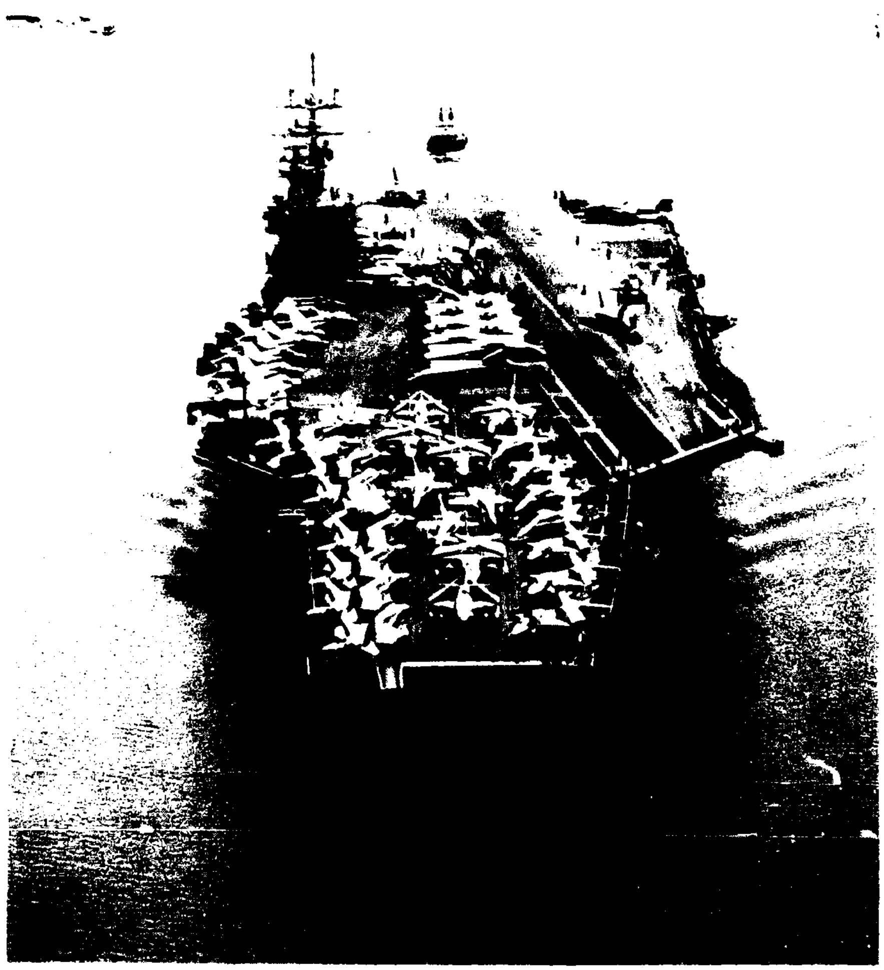
—**The Sustainment Phase**. One measure of the adequacy and appropriateness of the military inventory, item by item, is whether that inventory can support actual or anticipated combat usage rates until the production and distribution systems meet the field demand. Indeed that principle is supposed to define the military inventory requirements.

Delivery to Usage

Production base analyses that have been carried out by the military departments during the past several years show that many months are required to achieve projected balance between delivery and usage. These production lead times can be dramatically reduced in the short-term by applying "production surge" approaches and by effecting some streamlinings in the procurement processes.

The concepts of the Joint Industrial Mobilization Planning Process that is employed by the Office of the Joint Chiefs of Staff (Logistics) and Graduated Mobilization Response (GMR) have the objectives of determining the military end-use critical items (CII). They also identify the pacing procedural or manufacturing steps to preferentially initiate corrective actions, or early procurements, and thus shorten the time to achieve production sufficiency with concomitant reduction in the need for inventory.

Desert Shield provides the opportunity to evaluate the effectiveness of the GMR approach and to assess the capability of the military department to use surge and GMR concepts in the development of costed option packages for military planners. It might be added that GMR has been incorporated into Executive Order 12656 by Regulation 44CFR343ff. That Executive Order spells out the responsibilities of the 26 (sic) federal departments and agencies in emergency preparedness planning.



The USS Dwight D. Eisenhower (CVN-69) northbound through the Suez Canal.

Photo by PH1 [illegible]

A significant portion of the $2.3 trillion spent between 1980-89 was directed at improving combat sustainment capabilities.

The "Reagan Build-up"

Even before the outbreak of hostilities would initiate the sustainment phase in earnest, it should be possible to evaluate sustainment potential and, thus, to confirm or call into question the adequacy of force structure, inventory, and industrial responsiveness planning. A significant portion of the $2.3 trillion that was spent between 1980 and 1989 in the "Reagan Build-up" was directed at improving combat sustainment capabilities. For the *Desert Shield* type of contingency, were those funds appropriately spent?

There is a sustainment aspect to each of the initiatives that were identified in the first paragraph.

—The Post-Operation or Withdrawl Phase. While it is premature to speculate on the extent of the force and materiel commitments that the United States will make to the preservation of stability in the Middle East post-*Desert Shield*, the experience in the earlier engagements in that area suggests that the United States faces a long and expensive set of requirements to rebuild inventories and strategic reserve forces. How will that be accomplished? Is a one-for-one replacement either intended or appropriate?

Perhaps *Desert Shield* may prove to be a catalyst in the evolution of force structure and inventory for the nineties.

Some Major Issue Areas Identified In the Initial Phases of the Deployment

This background paper concludes by identifying a representative list of issues that emerged in the first weeks of Operation *Desert Shield*.

—Total Force Concept and the Adequacy of Combat Support Services (Army)

—Adequacy of Chemical Defense (Protective Masks and Clothing, Chemical Agent Monitoring Equipment, Antidotes) (Army is lead service)

—Adequacy and Timeliness of Strategic Lift (Air Force, Navy, MARAD)

—Readiness/reliability of Apache Helicopters (Army)

—Interoperability (Inter-Service and with Allies)

—Distribution of Water and Rations

—Spares and Maintenance in the Desert Environment

—Handling the contingency "what ifs?"-Supply and Support to indigenous forces, Arab allies, civilian populations, etc.

—Rotation and R&R Policy

All of these issues have aspects that are major responsibilities for the *defense systems acquisition manager and the program office*.

BECK - FROM REQUIREMENT TO CONTRACT

(Continued from page 7)

the low-price (FFP) bidder who is responsible (meets the requirements) and responsible (can do the work).

For more complex acquisition where the award criteria may be other than just price, a detailed "source selection" evaluation procedure may be employed to carefully evaluate and score each contractor's proposal against the evaluation criteria in the RFP.

Where a logical WBS has led to a clear and meaningful SOW, specification and overall requirement package, and where the type of contract is appropriately selected according to the cost risk of the expected contract, the source selection has the best chance of obtaining a good contract to achieve government objectives.

Changes resulting from discussions with contractors during source selection are incorporated by contractors in revised offers to the government. Before final contract award the contracting officer will initiate a pre-award survey to verify the capability of the contractor to perform. Contract Award takes place when the contracting officer has signed and distributed the contract to the contractor. Copies are promptly sent to the finance officer to record the obligation of funds, to the payment office, to the contract administration office and to others as required.

Contract Administration

When the contract is awarded the action begins. This summary has focused on the major activities in preparing for award. During the contract performance, the government contract administration team monitors the performance, implements changes where necessary, evaluates contractor systems for compliance with contract requirements, accepts completed goods or services and manages the payment process. Teamwork is required between the government buying and program office people and the rest of the team involved in administering the contract. Complex systems acquisition contracts run for several years and involve numerous contract changes as they progress. The award process is just the tip of the iceberg.

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For more information contact the DSMC Registrar, Ms. Linda Stiltner, 703-664-4777 or AV 354-4777.

INTEGRATING LEADERSHIP, PRODUCTIVITY AND PERFORMANCE

Or, What's Being Rewarded?

J.T. Carr

Are you finding that it's taking longer than you expected to implement the changes in quality you'd like to see? Perhaps the problem lies in what's being rewarded.

Some mid-level managers are struggling with and resisting change. How are you rewarding them? Are they being rewarded for streamlining their organization—for finding simple solutions to problems—for streamlining procedures and staff—for productivity improvements in the administrative and managerial processes?

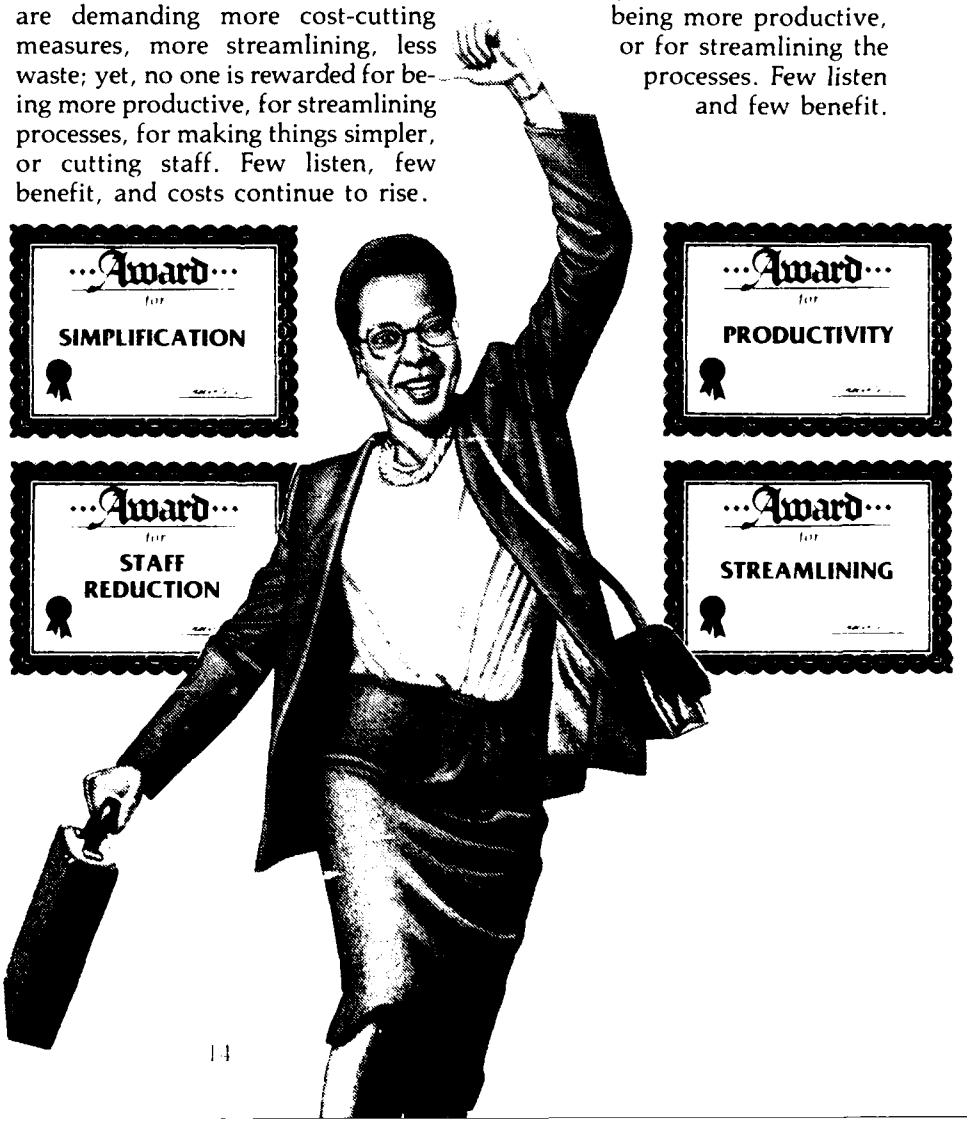
In the words of Michael LeBoeuf, Ph.D and author, "If you aren't getting the results you want, ask yourself: What's being rewarded?"

People at some pharmaceutical companies indicate they have several solutions to streamline the processes of staggering repetitive paperwork. Some clinics, hospitals and healthcare practitioners have solutions for reducing costs. People at Long's Drugs in Campbell, California, indicate they have several solutions that would streamline the workings of the operation. But, no one is rewarded to be more productive or creative; no one listens; and no one benefits.

Some political and military leaders are demanding more cost-cutting measures, more streamlining, less waste; yet, no one is rewarded for being more productive, for streamlining processes, for making things simpler, or cutting staff. Few listen, few benefit, and costs continue to rise.

Rewards are Needed

Many folks at Boeing have stopped submitting quality-improvement suggestions. Why? Few are rewarded for being more productive, or for streamlining the processes. Few listen and few benefit.

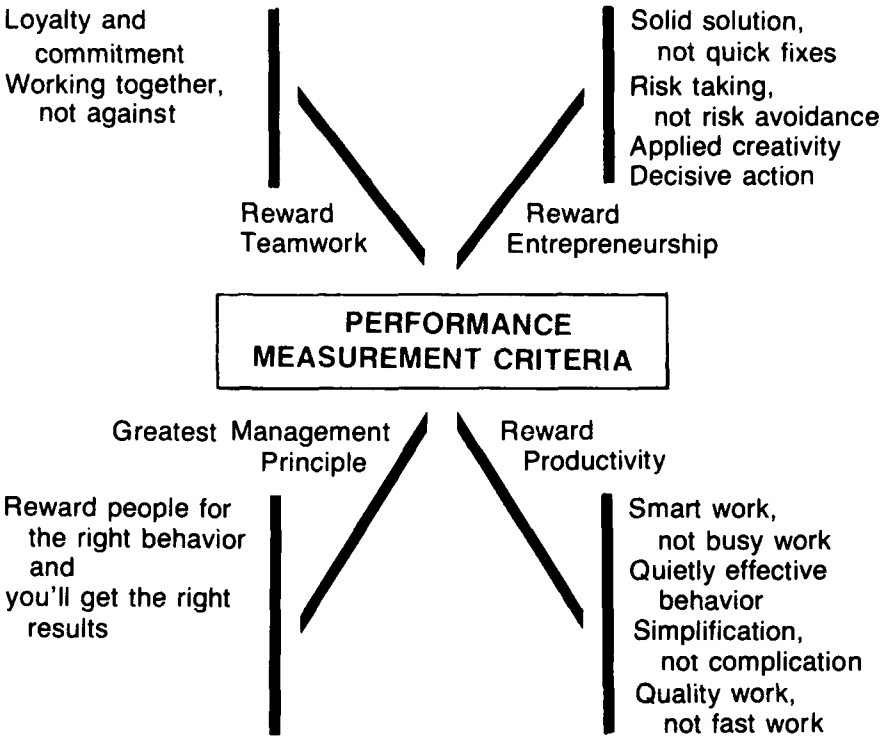


J.T. Carr, a quality improvement educator based in Bellevue, Washington, specializes in tools and techniques for higher quality, productivity and performance.

Small successes do happen, however. Lee Spingelt, manager of Patient Financial Services of Northwest Hospital, Seattle, Washington, identified several changes that he and staff implemented to be more cost-effective and productive. They streamlined processes that were too complex, and made the system work for them. Lee stated: "Productivity was aided by management and supervisors who together helped make suggestions to save time and effort.

Alan R. Carr, an orthodontist in Bellevue, Washington, conducts his practice in a productive, patient-oriented manner. When asked his problems, Alan stated: "I need a way to motivate my staff to continue to perform according to my management principles."

Leader-managers must be the role model for their staff in quality improvement. They must be the example for their staffs to follow. They must be rewarded and, in turn, reward their staffs for improvements in productivity, entrepreneurship and teamwork.



Source: *Greatest Management Principle in the World, M. LaBouef*

There is a criteria and a process that *does* work and can result in achievable, quality improvements through one's initiative and performance. It is simple, effective, and proved. Designed by Michael LeBoeuf, as described in his book and video, *GMP-Greatest Management Principle in the World,"* this performance management process is based on rewarding teamwork, entrepreneurship and productivity.

Reward "Smart" Work

LeBoeuf makes two basic statements: (1) The things that get rewarded get done, and (2) If you aren't getting the results you want, ask the magic question: What's being rewarded?

LeBoeuf suggests these things.

Reward solid solutions instead of quick fixes to ensure the achievement of long-range goals.

Reward risk taking, not risk avoidance; applied creativity, not mindless conformity; and decisive action, not paralysis by analysis to boost the spirit of entrepreneurship.

Reward smart work, not busy work; simplification, not complication; quietly effective behavior, not squeaking joints; and quality work, not fast work to improve productivity.

Reward loyalty, not turnover; and working together, not against, to foster teamwork and cooperation.

While I was Learning Center Supervisor at Boeing Commercial Airplanes, a division of the Boeing Company, the staff was asked to identify issues they and customers needed to resolve. After identifying these problems, the staff was organized into functional work teams, and asked to implement solutions, based on LeBoeuf's criteria, to the issues that they could control and effect. To provide the staff with the motivation to take action, each staff member was interviewed privately and asked to select 3 rewards, in priority, that they desired from the 10 available: (1) money, (2) recognition, (3) time off, (4) a piece of the action, (5) favorite work, (6)advancement, (7) freedom, (8) personal growth, (9) fun, and (10) prizes.

Within six months, staff accomplished the following and more. They streamlined several internal procedures, improved customer services, established standardization among 4 learning centers, deleted outdated courseware, and increased the number of professional books/courses available.

Teamwork Is Answer

Management provided the example for staff to follow by accomplishing the following. The ordering process and supplier procedures were streamlined; the receipt of training materials improved from 60 to 7 days; the use of corporate supplier discounts was increased; communications were improved through distributed reports, an internal newsletter, staff networking sessions, and regular staff meetings; the 1000+ monthly manual registrations were automated in 4 weeks, rather than 4 years, achieving savings in extra staff and overtime.

Through the spirit of teamwork and a variety of individual rewards, the staff's performance showed measurable results. Customer services were improved. The staff was happier. The customers were happier.

This approach also can be used for motivating managers to be more resourceful and productive, and for managing one's personal performance. My accomplishments in another 6-month period included the following things.

Room Scheduling

Accomplishments. Room-scheduling procedures were simplified and streamlined. A customer self-service scheduling process was implemented. Standards and procedures were established and documented. A simpler automated tool was used for publishing the training schedule.

Value to the Customer. The common problem of double scheduling in the same room was eliminated. The scheduling process was simplified, providing an easy transition for new staff. The system and schedules are easily maintained. Room reservations are self-service and more efficient for customers. There is easy visibility of room resources and more available rooms are being used.

Telecommunications Services

Accomplishments. The internal ordering procedures were streamlined. Internal telephone problems were resolved in 1-3 days, rather than weeks. Voice mail services were implemented. The 100+ telephones not in use were disconnected.

Value to the Customer. Telephone orders were placed correctly the first time. There were significantly fewer mistakes on daily orders. Telephone services were ordered and installed in 4 days, rather than weeks. Prelocation of telephones and faxes were accomplished with fewer mistakes and redo's. Customer services were improved through training on existing features. The result? The customer had increased services for decreased dollars.

Capital Asset Inventory

Accomplishments. Thousands of items were inventoried and tracked using a simple data base, designed using MS Word and its search feature. Physical audits of more than 800 items were conducted at 4 sites in 2 days by 1 temporary staffer. Previous-year data base information was provided as comparisons against current data. Procedures and guidelines were developed and published.

Value to the Customer. Items, previously double and triple counted, were corrected. Items previously considered lost were located, items previously considered as "having been surplussed" to another site were located, and the report, corrected. Transferred items were corrected to the appropriate manager. A simplified update procedure was developed for the next annual audit. Temporary staff could now use the data base with minimal assistance and training. Managers and staff could review the inventory via computer disk, using text processor software (MS Word) and existing skills.

These results were achieved by one person, while accomplishing other functions. There were no special assignments, no overtime, and little to no staff.

These improvements were achieved with a combination of a reward process based on entrepreneurhip, productivity, and teamwork; by management providing the lead being the example for staff to follow; and systematic techniques, tools, and strategies that made improvements achievable in a short time. This approach can be applied to any function, any service, any situation and industry, at work and at home.

Whether one is in the health-care industry, airplane industry, or any other industry, the criteria for quality performance is the same.

Make the System Work for You

According to Deming in the red beads experiment (video, *The Deming Lib.*, Vol. 8, *Lessons of the Red Beads*, Dist: Films Inc.), "people's career and paycheck are based on working and succeeding in an environment where the *system* will not work. Yet employees are forced to be successful. In these many cases, morale and motivation decreases substantially." Why are there so few improvements to the system?

In exploring why new ideas in organizations don't result in anything of much value, Gamache and Kuhn (*The Creativity Infusion*, Harper & Row) cite "...the pervasive and potent fear of failure that exists in almost all organizations...Why try something new and take the risk?...you get coveted promotions by maintaining a low profile and staying the course for many years; otherwise, you will haunt the corporate halls along with others who have tried, failed, and suffered career death."

Applies to All Functions

LeBoeuf lays out a strategy based on three major criteria that will ensure quality performance: teamwork, entrepreneurship and productivity. Managers must ask themselves the magic question: What is being rewarded?

This criteria to evaluate performance can be used to measure the performance of any function, any skill, any staff, any industry. Whether one is in the health-care industry, the airplane industry, or any other industry, the criteria for quality performance is the same. It can be applied to various management levels, to various staff functions, and to various and multiple industries and services.

If every individual, supervisor, manager, political/military leader, health-care practitioner—or child—were rewarded on this same criteria of quality performance, more results of value would be seen. Processes would be streamlined. Many costs would be cut. Unnecessary steps would be eliminated. Many of our industrial, health-care and other high costs would be decreased.

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Toward More Effective Management And Control Of CONTRACTOR PAYMENTS

William J. Hill

In the past few years many articles have been written critical of the Department of Defense (DOD) procurement practices and the many problems of financial management. One of the most significant and serious issues not discussed concerns administration of contractor payments. In this article, I will discuss a more effective method using existing DOD procedures to improve the government payment review and approval process by the on-site Government Representative Office. This article may be of help to the Defense Logistics Agency (DLA) as it assumes responsibility for the DOD Contract Administration Services (CAS) functions.

In the CAS environment one of the most important functions delegated to the on-site Administrative Contracting Officer (ACO) from the Program Management Office (PMO) is reviewing and approving the contractor's payment requests. This function is extremely important and time-consuming when you consider the absolute number, the dollar value, and the type of contracts administered by the government that require payment reviews on a monthly or bi-monthly basis.

Payment Review Process

The government payment review process starts when the ACO receives a request for payments from the contractor. The ACO normally will request a review by other functional organizations (engineering, production, subcontracts, and quality assurance) within the Government Plant Representative's Office to assure satisfactory progress is being made on the contract. The detail reviews are conducted by functional specialists and the results are forwarded (verbally and/or written) to the ACO, usually within 5 working days.

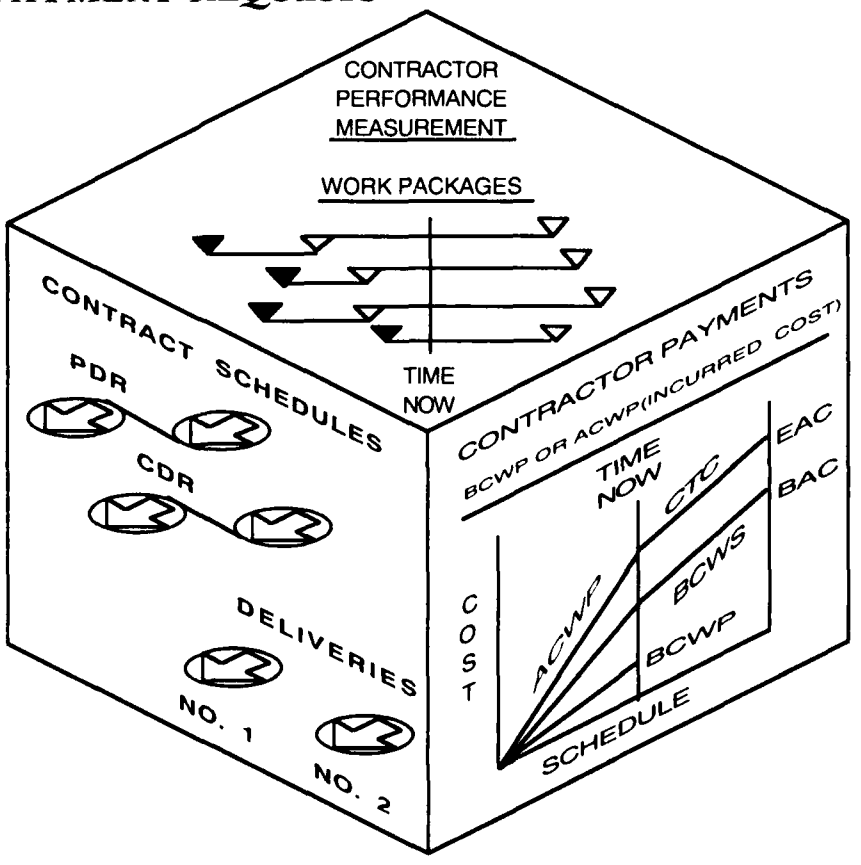
Historically, the average DOD contract has a payment percentage between 75 and 90 percent. This percentage is revised frequently due to changes in the industry. In special situations this percentage may be as high as 95 percent. The contractor applies the appropriate contract percentage to the individual contract's cumulative incurred actual (direct and indirect) cost which is then presented to the ACO for review and approval. Contractors are usually paid monthly but sometimes as often as bi-monthly.

The functional specialist asked to verify the contractor's payment request has to determine: (1) whether the contractor is making satisfactory progress/percent complete; (2) if the delivered items meet the contract requirements; (3) whether the contract will underrun or overrun at completion (if the contract is a flexible—Cost or Fixed Priced Incentive—type). If a contract is not making satisfactory progress, and/or the delivered items will not meet contract requirements, and/or the contract will underrun or overrun, then the ACO usually will be required to adjust payments.

If done properly, this payment review process is complicated and time-consuming, especially when considering the volume of multi-million dollar contracts administered by the government that require these reviews.

There are two commonly used methods to review and approve the contractor's payment requests; the method based on Incurred Costs or Actual Cost (ACWP) and the method based on Percent of Work Completed (BCWP). See Figure 1.

FIGURE 1. METHODS TO REVIEW AND APPROVE THE CONTRACTOR'S PAYMENT REQUESTS



Mr. Hill serves in the Program Management Control Division, Directorate of Program Management, Air Force Accounting and Finance Center, Denver.

Incurred Cost Method

The Incurred Cost method is used when contracts do not include government validated cost/schedule procedures. This method is based upon cumulative to date actual cost spent, (ACWP) in Figure 1 above, by the contractor as a percentage of the contract's total cost. The percent spent is based upon a passage of time and not the completion of contract tasks. The information available to the functional specialists usually is limited. If available, the functional specialist may review program-level schedules and manpower spending plans which could serve as a basis for determining percent complete, and any contract problems forwarded to the ACO.

The advantage of the Incurred Cost method is that it is easy for the contractor's finance organization to gather accounting system actual cost data and prepare it for the payment request form required by the government. The disadvantage is that the progress payment is not based upon the completion of scheduled contract tasks or meaningful objective indicators. It is extremely difficult for government functional specialists to compare or evaluate a contractor's program-level schedule status and planned deliveries with accounting system actual cost information because this information is not integrated. On flexible-type contracts, the Incurred Cost method makes it difficult for the government to ascertain and verify the contract's cost at completion status, without a time-consuming independent cost study.

Percent Complete Method

Many of the large-dollar, flexible-type contracts include monthly government external cost/schedule reporting requirements. These government external reporting requirements range from the cost/schedule management of non-major contracts (Cost/Schedule Status Report C/SRR) to the full-up Cost/Schedule Control Systems Criteria (C/SCSC) and the accompanying Cost Performance Report (CPR), which are usually placed on major weapon system procurements. The C/SSR is usually a requirement on flexible-type contracts that are greater than $2 million and the period of performance is greater than 1 year.

The C/SSR is a two-format report. The first format displays the contracts' "cumulative to date" and "at completion" performance by the contract Work Breakdown Structure (WBS) and gives the reader cost and schedule variances. The second format is a narrative analysis report that discusses reasons for and corrective actions to the cost and schedule variances on format 1 that exceed contract thresholds. The data in the C/SSR usually is more subjective than in the CPR because the management system that generates the C/SSR has less-disciplined requirements than the system that generates the CPR, which is a government-validated C/SCSC.

The CPR is a five-format report that displays cost/schedule information by WBS, by the contractor's internal organizations, the contract budget baseline, the contract manpower loading, and a problem analysis report for variances that exceed thresholds. The CPR displays information for the current accounting period, cumulative to date and at completion performance.

When the C/SCSC and the CPR are made part of the contract, the government receives the most objective information available about contractor performance. The C/SCSC is a set of 35 criteria that a contractor's management system must meet to receive government approval or validation.

In general, these criteria add discipline to a contractor's management system plus the added feature of "Earned Value" or "Percent Complete." In the C/SCSC vernacular Earned Value is referred to as Budgeted Cost of Work Performed. Earned Value may be defined as the numerical representation (in dollars) of the value of all contract work actually accomplished in a given period of time. It is based on updating contract scheduled tasks actually completed. These tasks have values associated with them, hence the term "Earned Value."

The criteria require the contractor to update the Estimated Cost at Completion (EAC) periodically on flexible-type contracts. The EAC may be defined as the sum of all contract actual direct costs, plus indirect costs allowable to the contract, plus the estimate of cost (direct and indirect) for authorized work remaining. The Earned Value and EAC values are available for review, usually on a monthly basis as they are incorporated into the C/SSR and CPR. Currently, there are more than 300 DOD contractor facilities validated by the government for C/SCSC. Even more contractors have met government C/SSR requirements.

The C/SSR and CPR are delivered monthly and may be tailored to government requirements. The data in these reports can be traced into the contractor's internal organizations if problems arise. These reports are the best source of reviewing and verifying contract performance against a formal contract budget and schedule baseline.

Advantages of Using CPR and C/SSR Data In Payment Reviews

There are several advantages of using CPR and C/SSR data for the management of payment reviews. The *first* is the reports provide the government with the most objective information available to manage the contractor's performance and payments on a monthly basis.

The *second* is the Earned Value and Cost at Completion values are readily available in either report for the government ACOs and their functional specialists to review on a monthly basis. They can track cost/schedule trends and, where appropriate, take exception to the contractor's EAC forecast.

The *third* is the manpower savings to the government due to less time spent to conduct these payment reviews because the contract cost/schedule performance is in one monthly report that summarizes the program status. The payment verification is then merely a review of the report and asking questions of the contractor when significant variances appear, as opposed to an extensive and time-consuming special study. There is a potential saving in the administration and processing time the government devotes to these

monthly or bi-monthly payment requests.

The *fourth advantage* is that data in the reports are traceable to the contractor's internal records or data base, and monthly reconciliations can be made between payment requests and C/SSR or CPR data. Comparisons between Incurred Cost and Percent Complete calculations can be made monthly and differences can be analyzed and/or reconciled.

The *fifth advantage* is that reports will provide the government with visibility into the contractor's direct and indirect charging practices and allocations of overhead cost. Any changes to contractor's charging practices procedures will be readily apparent in these cost/schedule reports.

Finally, the contract clauses that are the basis for the cost/schedule report requirements will give the government access to all the data base information that generates the reports.

Disadvantage of Using CPR and C/SSR Data in Payment Reviews

The primary disadvantage of using CPR and C/SSR data to review payments from the contractor's standpoint is the labor time or cost spent preparing reports and answering follow-up questions the government may have concerning variances and/or differences between Incurred Cost and Percent Complete methods. Since there are more than 300 contractor facilities validated for C/SCSC by the government, time spent by DOD contractors for developing procedures should be minimal. Time spent by these contractors answering questions by the government will vary with the status of each program.

Impact of Not Using CPR and C/SSR Data In Payment Reviews

There are primarily four major impacts of not using CPR or C/SSR information to verify payments requests. The *first* is lack of visibility by the government to the contractor's performance. Program schedules, deliveries, and the EAC may all deviate from contract requirements

When the C/SCSC and the CPR are made part of the contract, the government receives the most objective information available about contractor performance. The C/SCSC is a set of 35 criteria a contractor's management team must meet to receive government approval...

without government knowledge. The program may be in such a condition that it may be too late for the government to take corrective action or make the proper decision. Each of these program deviations would usually require a progress-payment adjustment.

The *second impact* is loss of leverage in dealing with the contractor. Since the Incurred Cost method is based upon the passage of time, it is therefore more subjective in nature than Percent Complete. Using Incurred Cost when a contract is in trouble usually will result in the payment to a contractor in advance of real performance. This results in reduced incentives to the contractor in the future. The effect of paying the contractor in advance of performance is, therefore, to reduce the government's future alternatives.

The *third impact* is the additional time spent by the government reviewing and verifying contractor performance. If done properly, these reviews are time-consuming in terms of government manpower and are, therefore, expensive.

Finally, not using CPR or C/SSR information adversely impacts the goverment's cash flow. By making payments based on Incurred Cost the contractor's cash flow will increase and the government's will decrease by the passage of time no matter what the contractor's performance.

Conclusions

The CPR and C/SSR with their Percent Complete Method will provide the government ACO with a more timely, more thorough, and more objective payment-review information than using the Incurred Cost Method. The CPR and C/SSR will provide the government with better visibility to manage programs and assist in dealing with contracts that are not performing satisfactorily. The government will be better prepared and informed to make the necessary management decisions and take appropriate corrective actions. These corrective actions will most likely affect the contractor's payments.

Savings will accrue to the government in terms of reduced hours spent on the payment reviews and by preventing payments to contractors in advance of actual performance.

Using government validated cost/schedule procedures may allow for less frequent payment reviews and still achieve the same objective.

The DOD would be well advised to insist validated cost/schedule procedures be implemented on all large dollar contracts—flexible and inflexible, prime and subcontracts—that require payment reviews by the government. Validated cost/schedule reporting will ensure proper program controls and provide the government with a more effective and efficient method of conducting government payment reviews.

1991 ACQUISITION RESEARCH SYMPOSIUM

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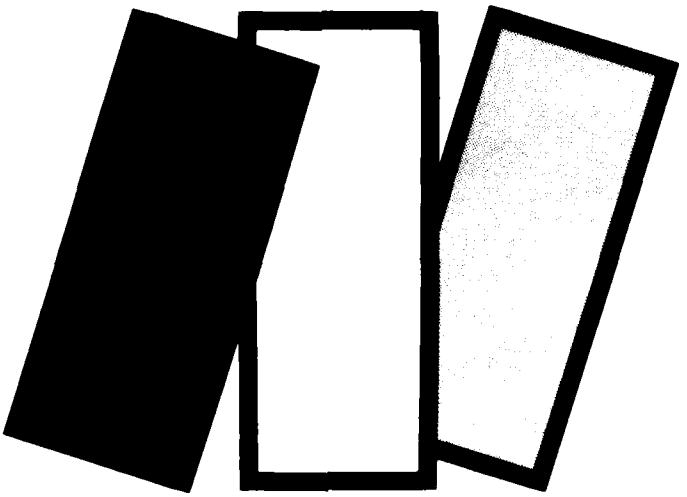

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Luncheon Speaker:
Mr. John Rittenhouse,
Senior VP, GE Aerospace

Concurrent Panels (Papers)

Wednesday, June 5, 1991

0830-1630

General Session
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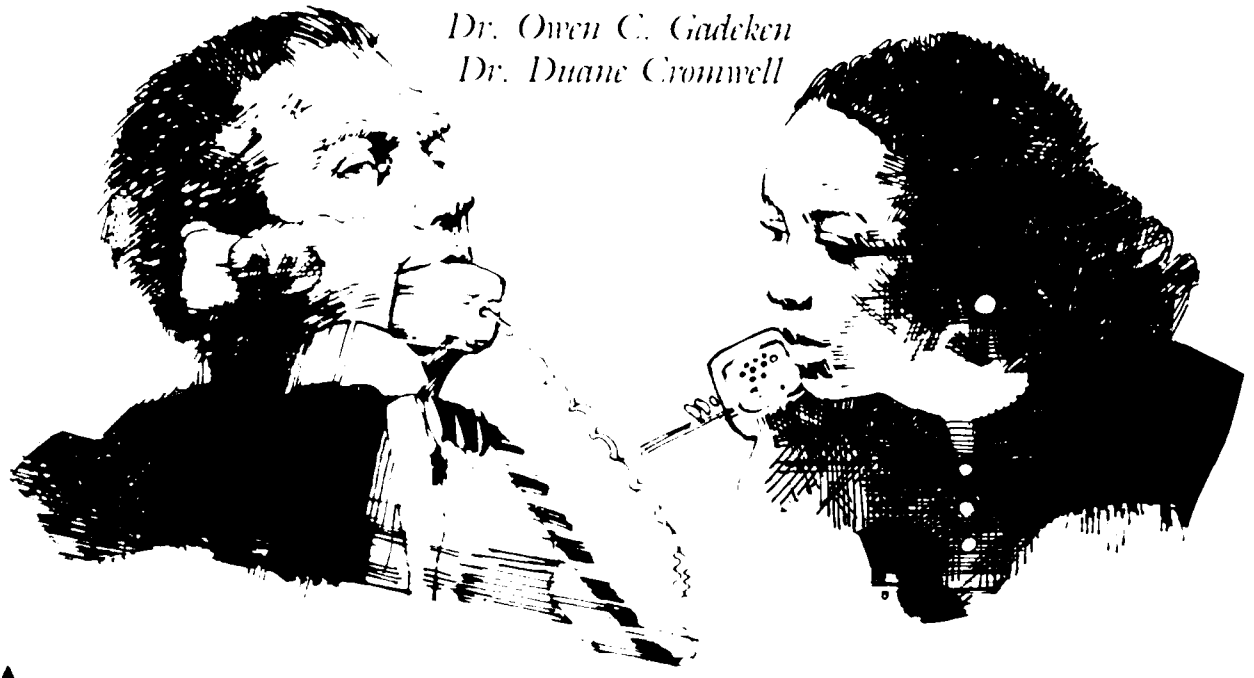
PROGRAM MANAGEMENT TRAINING IN DEFENSE INDUSTRY

Interviews with 32 PM Trainers in Industry

Dr. Owen C. Gadeken
Dr. Duane Cromwell



As part of its ongoing program of educational research, the Defense Systems Management College initiated a survey of how program management training and development was done by major defense contractors. The survey was conducted by Cambria Consulting under contract with DSMC's Educational Research Directorate. This article presents summary results and conclusions from the survey.

Dr. Gadeken is Director of Educational Research at the Defense Systems Management College. Dr. Cromwell is a consultant for Cambria Consulting, Inc., Boston.

Methodology

Starting with a target population of the top 50 U.S. Defense contractors by dollar volume, 32 companies/divisions were surveyed for this study. A standard series of questions was developed by Cambria Consulting. Often, interview questions were a starting point for additional data that did not fit into the original framework.

The target for each interview was the person responsible for program management training in the company/division. These company focal points proved difficult to locate. In several companies, more than one person was interviewed. Interviews ranged from 10 to 75 minutes, with the norm being 30 minutes. Four of the interviews were conducted in person; the rest were done by phone.

Results

Survey results are summarized in Table 1 using questions from the interviews. Results are further discussed in the paragraphs below which are numbered to match the interview questions in Table 1.

1. Program Manager (PM) Classification. Program (or project) manager was not an identified job title or classification for most companies. There were several reasons for this. Often, individuals performing program-manager functions held various job titles such as vice president, director, senior engineer or project leader. Such classifications fit each company's organization, personnel and payroll systems. Titles even varied by division or group within the same company.

TABLE 1. SUMMARY RESULTS OF DEFENSE INDUSTRY SURVEY

32 companies were surveyed

23 of the companies offered 29 tailored PM courses

	YES	NO
1. Is there a distinctly recognizable group of program managers in your company/division?	7	25
2. Is there a formal process for selecting program managers and what are the criteria for selection?	4	28
3. Does your company have written policies covering the development of program managers?	2	30
4. Are there required courses or development tracks for program managers?	2	30
5. In your company, are there courses or programs available only to program managers?	23	9[a]
6. What is the content and duration of these courses?		

	Number of Courses	Average Length
Orientation Course for New PMs	8	5 days
Overview Course for Existing PMs	18	5 days
Advanced Course for Experienced PMs	3	3 days
(23 companies offered 29 courses)	29	

Major Topic Areas	Number of Courses which included it (% of 29 total)
Company/DOD Acquisition Environment[b]	13 (45%)
Technical Management[c]	10 (34%)
Business Management[d]	15 (52%)
Project Management[e]	18 (62%)
Leadership/Management Skills[f]	16 (55%)

In most companies, program managers (or equivalent titles above) existed for the duration of their programs and then frequently took on other non-program management assignments. Since programs constantly were being formulated and closed out, the poplution of program managers was dynamic.

For purposes of this study and in the remaining survey questions, program manager was used as a generic term to include the equivalent titles described above where the individuals were, in fact, managing defense acquisition projects or programs.

2. *PM Selection.* Only four companies used a formal process for selecting their program managers. This process normally was based on completion of job rotations and specific training. One company had developed an internal certification process for critical program management skills. Informal selection or promotion from within was the norm for the other companies.

3. *Written Policies for PMs.* Only two companies had written policies governing program manager training and development. However, written policies were being considered by four other companies. The remaining companies used some combination of invitation or recommendation by management and peer pressure to encourage participation in development activities.

4. *Required Courses for PMs.* Only two companies required their program managers to attend certain courses. For the remaining companies, program manager development was by invitation, request or recommendation.

5. *Separate PM Courses.* Twenty-three of the companies had separate program management (or project management) offerings. Such courses were distinct from the regular

7. How were these courses developed?

	Internal Staff (only)	Internal Staff and Consultants	Consultants (only)
Developed by (29 total)	16	9	4
Taught by (29 total)	17	10	2

8. In your company/division, who has the responsibility for program manager training and development?

Line Management	5
Designated Director of Program Management Training	2
Within Corporate or Division Training Function[g]	25

[a]Included four companies who were planning to offer courses in the future.

[b]Included such topics as defense acquisition environment, DOD contracting and/or budgeting, company project management policies/procedures, and internal/functional company support to PMs.

[c]Included such topics as managing the design, systems engineering, configuration management, transition to production, logistics, and software management.

[d]Included such topics as new business development, preparing winning proposals, contract administration, cost estimating, and financial management.

[e]Included such topics as project planning, network scheduling, program control, performance measurement, risk management, and total quality management.

[f]Included such topics as leadership, influence, team building, interpersonal skills, problem solving and decision making, conflict management, and personal skills checklists.

[g]Four companies called this employee development or human resource management.

management training offered by the companies. Four of the nine companies that did not offer separate program management training were planning to offer courses in the future.

6. *Content and Duration of PM Courses.* Industry program management courses fell into three general categories. Eight companies offered a special orientation course for their new or potential program managers. The courses averaged one week in length, but most companies broke the course into modules (usually two) offered over a longer period. The bulk of the courses (18) were of an overview nature and offered to existing PMs. This often included newly appointed PMs. These courses also averaged 1 week in length, but the specific courses clustered at 3-day, 1-week, and 2-week time periods. Finally, three companies offered advanced courses for their experienced PMs which averaged 3 days in length. It should be noted that the 29 courses were offered by 23 companies. This resulted from four of the companies offering two courses and one offering three.

The content of the program management courses varied widely based on each company's unique needs. Five distinct topic areas emerged from examination of the total set of courses. These are defined more explicitly in the footnotes to Table 1. The slightly lower frequency for technical management probably reflects the fact that most program managers are already experienced engineers and were judged to need less training in the technical management disciplines. An interesting finding not reflected explicitly in the Table 1 data was that 18 of the courses (62%) covered only one or two of the topic areas. This seems to reflect a desire by many of the com-

panies to provide a particular focus to their program-management training.

7. *Course Development and Conduct*. There was a fairly common scenario for how new program management training programs were established. Although there were many variations, the basic process went as follows.

One of the senior executives decided that the company needed to have a program management training program because either some or many of the company's key programs were not performing well; or, the executive found out from peers in other companies that they were doing program management training.

A committee of executives, senior, current or former program managers and, perhaps, education specialists were pulled together and went through some form of brainstorming, prioritizing, and selecting process to decide what the content of the training program should be.

The content outline was turned over to a curriculum design function. The design was most often done by in-house education specialists, sometimes by outside consultants, and very seldom by someone in the program-management community.

The course was reviewed by the steering committee, revised, pilot-tested, reviewed and revised again, and then rolled out. The most common scenario was for the course to be taught by internal content experts pulled from the various program and functional disciplines. Others used the internal training staff and/or outside consultants to teach some or all of the program. Often, the bulk of the course was taught by internal staff, with one or two special topic modules brought in. Frequently used contracted modules included influence, leadership and computer management simulations.

8. *Responsibility for PM Training and Development*. The most frequent point of responsibility was within the company's training and development department. In five cases, the responsibility was in the hands of line management. Two companies had designated directors of program management training. No difference in the quality or content of the training programs was observed that could be attributed to who controlled the process.

Study results should be interpreted as a snapshot of the current climate, thinking, and approaches to the emerging discipline of program-management development.

Additional Information from Interviews. The interview questions often were only a starting point for a general discussion of program-management training and development in each company. These discussions brought out other interesting and innovative development approaches being pursued by different companies. Some of the companies had formed a program manager council made up of senior PMs to advise the company on program management and training issues. Other companies had or were planning to develop a PM procedures handbook. They then planned to revise their orientation course based on the handbook.

Increased use was being made of tailored checklists or skills inventories covering both PM functional disciplines and personal skills. Feedback was provided by comparing the PMs self-rating with those from supervisors, peers and subordinates. The assessment could then lead to an individually tailored PM development plan. However, most companies using inventories had not progressed this far.

As part of their PM orientation courses, some companies used company-specific case studies that had been developed from very successful or very unsuccessful actual programs. Many of these cases were presented by the person who was the program manager at the time. To complement their formal course offerings, a few companies had instituted periodic (breakfast or evening) PM seminars on topics of current interest. These were presented by senior management, PM participants or outside experts.

Conclusions

This study highlighted the fact that program management in DOD and the defense industry is dynamic. Training programs which were relevant and sufficient a few years ago are now being questioned and redesigned, discontinued entirely, or replaced by programs based on new philosophies of program management. Thus, the study results should be interpreted as a snapshot of the current climate, thinking, and approaches to the emerging discipline of program-management development.

The defense contractors participating in the study were unique and differed from each other on key dimensions which included:

- —Size of the corporation
- —Organization
  - —Number and type of divisions
  - —Centralized versus decentralized management
  - —Degree of matrixed functional support
- —Nature of Work
  - —Research & Development versus manufacturing
  - —Prime versus subcontract
- —Type of products
- —Mix of commercial and defense work
- —Financial well-being
- —Training budget/emphasis on development.

Having variability in the sample made it difficult to draw firm conclusions. However, several definite trends were evident and are highlighted below.

A. **Industry program management training is not formalized and is thus difficult to manage.**

Very few companies had standard guidelines or policies for program management. Many companies did not even identify their program managers as a distinct group with different development needs. This made designing a training or development program much more difficult because there were no standard practices to use as templates.

Fewer companies had written policies for the development of their program managers. For the most part, training was "recommended" but not required. Often, program managers who most needed the training sessions (because of modeling or visibility), did not attend because their presence on their programs was so critical.

B. **Considerable training but not much development is occurring in the defense contractor community.**

Many companies used their 3-day, 1 or 2-week courses only as an orientation for new or existing program managers. The courses were not skill-building in nature. Career development activities like planned job rotations, ongoing seminars for updating skills, coaching, and mentoring were rare. Without such a career perspective, the impact of a single orientation course may be marginal.

C. **There is a growing appreciation of the importance of "soft" skills versus technical skills in program-management training.**

Most industry program management training programs were slanted heavily toward knowledge of the array of program management specialty areas necessary to manage complex technical programs. These included acquisition policies, systems engineering, configuration management, finance, contracts, program control and risk management. However, a growing number of contractors have concluded that knowledge and skills in these areas are necessary, but insufficient. Program managers must also be skillful facilitators of complex interrelationships, most of which are under their direct control. This requires skillful use of leadership and management skills like team building, problem solving, quality management, and influence. With this awareness, many contractors have begun to shift the nature of their training programs to include more of the so-called "soft"skills. This has resulted in more introspective, experiential, and inquiry-based methods rather than lectures providing data or answers. Classroom methods then include more feedback, processing of interactions and team-oriented activities.

D. **Industry program management training is being significantly affected by budgetary pressures.**

Five of the contractors surveyed said they had previously offered program/project management courses or sent people to DSMC courses but had stopped due to lack of funding. Many other companies said they had cut back on their offerings or were not developing any new courses.

For some of the companies, the training dollars previously applied to program management training had been reallocated to their mandated training such as ethics, drug-free workplace, or cost accounting standards. Some of these programs were federally or locally mandated, but they all required a new investment of training time, money, and instructor resources. This exacerbated the upward pressure on overhead rates, which many contractors felt intensely, and discretionary training was often curtailed or cancelled as a result.

E. **There is little information exchange between contractors regarding the training and development of program managers.**

Since it was difficult to find the contract point for program management training in many of the companies, it wasn't surprising that these focal points said they didn't talk to their peers in other companies. However, they individually expressed keen interest in having better information exchange.

As expressed by one of the training directors, "What a wonderful time it would be right now if DSMC's process of examining its training programs would be in partnership with some of us out here trying to go through the same thing. Basically, we are asking the same questions and should try to support each other. We are all trying to achieve the same things—quality products for the people who use them."

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E. Total distribution: 11,809

F. Copies not distributed

1. Office use, left over, unaccounted, spoiled after printing: 191

2. Returns from news agents: None

G. Total distribution: 12,000

YOU CAN IMPROVE THOSE SUBJECTIVE ESTIMATES

Don't Just Roll the Dice!

Brian Hagen

Making subjective estimates is a daily occurrence for everyone. As an example, consider the planning of a weekend barbecue for friends. We estimate the number of hamburgers and hot dogs to be consumed, cost of food and beverages, and time required for a trip to the store to make purchases. Accuracy of our estimates mostly depends on two components: the amount of experience we have making the same or similar estimates, and the degree of uncertainty associated with the estimates. If we have barbecues every summer weekend with the same friends, and this is the sixth one, chances are we can estimate the above values accurately. However, if we do not know the number attending, their food preferences, or whether the store carries a favorite barbecue sauce, our estimation problems are more difficult.

Much evidence has been documented regarding the difficulty in making subjective estimates under uncertainty.[1] A few heuristics have been proposed that help explain how we actually construct these estimates. Although these heuristics are economical and efficient to use, they can introduce systematic biases that can result in severely inaccurate estimates. Fortunately, accuracy is not critical for most of the subjective estimates we make; consequently, biases resulting from our mental process have little impact. However, under situations in which our subjective estimates have significant impact on important decisions, improving the accuracy of our estimates by reducing biases has realizable utility.

Consider the role of a program manager in an engineering organization, who must perform many subjective estimates. These include constructing schedules that require estimating time duration of tasks, estimating distribution of manpower

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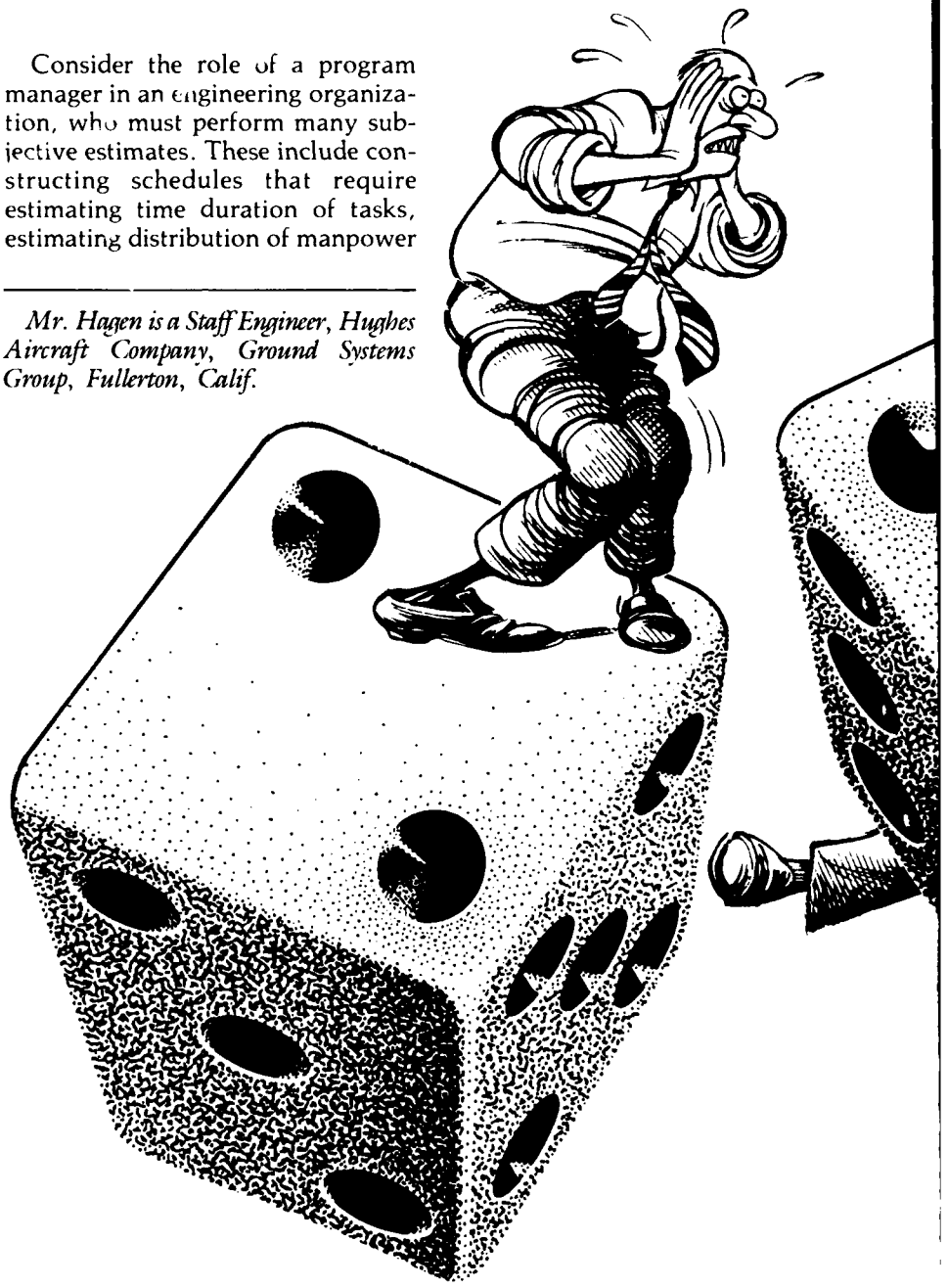


required to meet proposed schedule, predicting type and level of physical resources required for each task, and developing budgets aggregating all information. The degree of uncertainty associated with these estimates can be great. Models exist to aid the manager in calculating these estimates but even model-based estimates need sanity checks.

Due to complexity of the estimation problems and the desire to be competitive, estimates constructed by managers often are severely underestimated rather than being nearly correct or overestimated. Is there a credible approach to performing subjective estimates that reduces systematic biases? Yes. Before we can understand the approach, we must understand heuristics causing the biases.

The intent of my paper is to describe a few heuristics commonly used for performing subjective estimates, discuss types of biases resulting from using these heuristics, and introduce an approach for "thinking through" subjective estimates under uncertainty.

Heuristics and Biases in Subjective Estimation

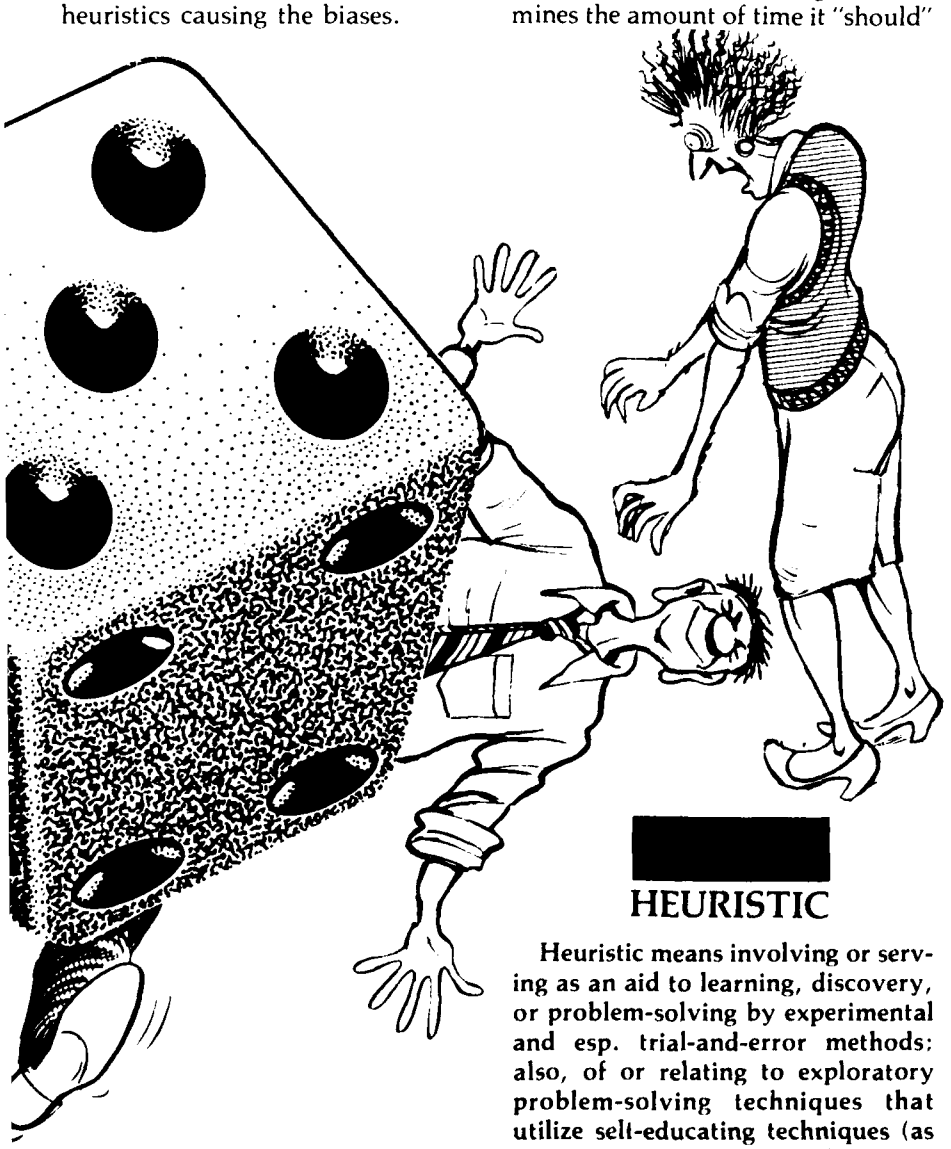
Heuristics are proposed to suggest how individuals mentally retrieve and process information as they make subjective estimates. Following is an overview of those commonly used.

Adjustment and Anchoring.[2] Consider a manager estimating the time required to perform a given task. Initially, the manager determines the amount of time it "should" take, the *anchor*. The hidden assumption behind this initial estimate usually is "all things will run smoothly." Then, the manager will make *adjustments* to this initial estimate to account for possible problems. These adjustments are usually insufficient. The adjustment and anchoring heuristic are used whenever an estimate is constructed by perturbing some initial estimate or starting point. The anchor, or starting point, is often developed while motivating the estimate.

Availability.[3] Recent events are easier to recall than past events. An infrequent disastrous event may be easier to visualize than an infrequent nondisastrous event. The availiablity heuristic is used whenever an estimate assigned to an event is based on how easily instances and/or associations of the event are recalled or visualized. Consider again the manager estimating time required to perform a given task. The availability heuristic is used when a manager bases an estimate on information from the most recent, similar situation. If the two situations are truly similar, this heuristic may result in a good estimate; if not, the heuristic can lead to significant error.

Representativeness.[4] A sample of a population is said to be representative of a population if the characteristics of the sample and the population are similar or the same. In essence, the representativeness heuristic is used whenever estimates are reduced to judgments of similarity. This heuristic causes problems when too much attention is paid to what is similar and not enough attention is paid to what is different between the current situation and a past event. Estimates are largely determined by availability if individual instances are emphasized and by representativeness if generic features are made salient.

Simulation.[5] There are two ways we mentally focus on events: recollection and construction. The availability heuristic is based on recollection; the simulation heuristic is based on construction. The simulation heuristic is used whenever an estimate of a value is determined by, and the result of mentally constructing a chain of hypothetical events (scenario). A manager with no previous related experience regarding the time estimate of a given task will



HEURISTIC

Heuristic means involving or serving as an aid to learning, discovery, or problem-solving by experimental and esp. trial-and-error methods; also, of or relating to exploratory problem-solving techniques that utilize self-educating techniques (as the evaluation of feed-back) to improve performance.

often use this heuristic. If the manager considers one possible set or chain of events (i.e., only one simulation), the estimate may be severely biased.

When used properly, each of the above heuristics can be useful in constructing good subjective estimates. Unfortunately, haphazard use may result in s. 'ere biases. The problem is compounded when a subjective estimate is based on an aggregation of other subjective estimates. The result of this compounding is illustrated in Figure 1. Suppose a subjective estimate of an event is to be constructed from estimates of five components; furthermore, suppose the probability that any one of the components is severely underestimated, is only 0.10 and that components are mutually independent. From Figure 1 it is evident the probability of at least one of the estimates being severely underestimated is 40. If the aggregated estimate is based on 10 other subjective estimates the probability of severely underestimating at least one component is over 0.65.

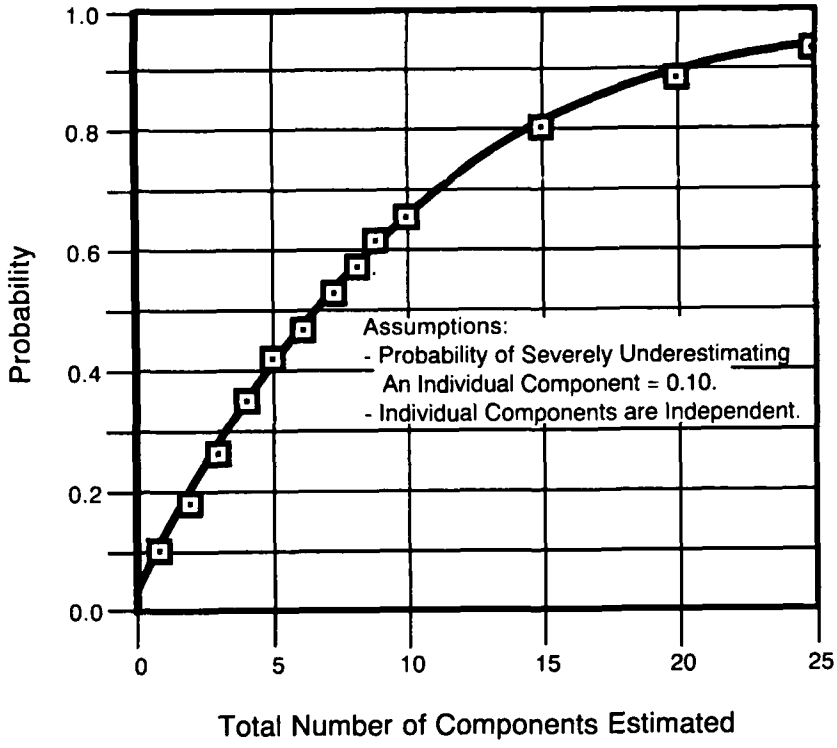
One attribute that truly contributes to improved estimation accuracy is experience, which improves accuracy of estimates based on the preceding heuristics. Experience often results in greater *adjustments* to mental *anchors;* also in a greater base of *available* and relevant *(representative)* information. Experience offers the opportunity for easily constructing multiple mental *simulations.* This is not to say the only way to improve subjective estimates is to become experienced. The following section gives an approach that can improve subjective estimates.

Performing Subjective Estimates

To reduce biases that may result from heuristics used for constructing subjective estimates, I suggest the following four steps.

Step 1: Motivation. Clearly define value to be estimated so that no ambiguities exist regarding its definition. Consider all internal and external influences that may significantly impact value to be estimated. Consider underlying similarites and differences between value to be estimated and value from past experiences. Avoid errors resulting from mentally making transformations and calculations by choosing a unit of measure you are most comfortable thinking about.

FIGURE 1. PROBABILITY OF AT LEAST ONE SEVERELY UNDERESTIMATED COMPONENT IN A SET OF COMPONENT ESTIMATES.



(Perform required transformations analytically after estimates are made; e.g., conversion of units of measure or aggregations.)

Step 2: Construct "Bad" Case Estimates. Consider (mentally simulate) a bad scenario. Mentally think through complete series of events associated with bad scenario and record an estimate of value based on this simulation. Do this for several bad scenarios.

Step 3: Construct A "Best" Case Estimate. Consider (mentally simulate) best possible scenario. Mentally think through complete series of events associated with best possible scenario and record an estimate of value based on this simulation.

Step 4: Construct Nominal Estimate. Construct your final estimate by choosing a value between estimate based on best possible scenario and estimates based on bad scenarios. (Too often estimates are at or near the best case value resulting in underestimation).

Here are do's and don'ts for subjective estimation emphasizing the most important aspects of the above procedure.

—Do consider all internal and external influences that may significantly impact value to be estimated before any estimate are constructed.

—Do consider underlying similarities and differences between value to be estimated and value from past experiences.

—Do construct several estimates based on "bad" scenarios, accounting for significant dependencies within scenarios, before focusing on normal estimate.

—Do construct an estimate based on best possible case scenario before focusing on nominal estimate.

—Do set nominal estimate equal to a value between estimate based on best possible scenario and estimates based on bad scenarios.

—Don't consider a nominal estimate before estimating values for bad scenarios and best case scenario.

(Continued on page 36)

ADJUSTING TO TQM

A Continous Improvement Approach For Seasoned Managers

Subhash S. Paradkar

How can seasoned managers adjust to the Total Quality Management (TQM) philosophy? Adjusting to TQM means a cultural change and a change in attitude. We must train managers how to adapt and adjust to a new way of doing business. Initially, the training process should include how to influence changes to the organizational and leadership behavior. Measurable short-term benefits and recognition for the self-help effort can strengthen the manager's belief in TQM. This could help develop a positive attitude toward TQM and its inherent continuous process improvement approach.

Consistent with this approach, we must find ways to improve existing management techniques while learning new ones. It requires learning how to use new tools for improvement such as statistical process control, quality function deployment, and Taguchi techniques. Instilling TQM philosophy in managers who have been around for 15-35 years can meet resistance. To overcome the resistance, we must understand the

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current attitudes and leadership behavior of managers in a broader sense.

Understanding the "I Know My Business" Attitude

Most managers fall within the broad spectrum of the attitudes of Theory X and Theory Y managers as described by the late Douglas McGregor. The seasoned managers know their business of managing missions. functions, tasks, people, resources and situations. They hear about management theories on values, attitudes and motivation. We know that parents, childhood experiences, and home life influence our values.

For U.S. managers, an additional challenge is managing and working with multicultural organizations. It means understanding values based on religion, regions of the country of birth, ethnic or racial background, and educational system. We know that attitudes are hard to change for both managers and employees, male or female. We agree that the changes in values or attitudes can occur as a result of a significant emotional event...an event that causes us to ask a series of questions. Who am I? What do I believe? Do my beliefs and values help or hinder my effectiveness today?

Most managers believe in getting the job done through people. They say people are their most important assests. Yet, the question remains: Are their thoughts, words, and actions in harmony with each other?

Understanding and Working with Theory X Managers

Theory X managers make basic assumptions.

—The average human being has an inherent dislike of work and will avoid it if possible.

—The average human being prefers to be directed, wishes to avoid responsibility, has relatively little ambition, and wants security above all.

—Because of disliking work, some people must be coerced, controlled, directed or threatened to get them to put forth adequate efforts toward achievement of organizational objectives.

In industry and government, we find Theory X managers expressing these beliefs in thoughts, words and actions. Employees often perceive these managers as egocentric, dictatorial, arrogant and ruthless. This classifies Theory X managers as task-oriented.

Reacting to the Theory X behavior is like driving through fog. To reduce the risk, we must drive slowly and cautiously. Theory X managers often are abrasive while communicating with people, creating a communication fog or barrier. Characterizing someone as a Theory X manager based on an isolated event also creates a communication barrier. Getting through these barriers requires a cautious approach. Theory X managers think employees often misjudge their leadership behavior, saying that others perceive forcefulness as being dictatorial. We cannot change the attitude of Theory X managers, but we can suggest how to react.

The following strategies can be helpful in working with those we perceive as Theory X managers.

—Listen to them carefully. Try to translate their requirements into specific goals, products/services and tasks.

—Organize your work. Chart your process-flow. Set up measurements and controls for your work process. Show them that you are in control.

—Keep them informed with periodic oral or written communication.

—Don't take negative comments as an attack on your personal character or value system. Don't overreact.

—Learn to be more patient, tolerant and cheerful.

—Don't unload your emotional baggage under stress or time constraint.

—Document your progress and use of your resources.

—Occasionally, make them feel super-important.

—Don't expect a reward for group performance or teamwork. They may reward themselves at the expense of employees.

—Think positive. Learn to forgive and forget.

Understanding and Working with Theory Y Managers.

Theory Y managers make the following basic assumptions.

—Expenditure of physical and mental effort in work is as natural as in play or rest.

—External control and the threat of punishment are not the only means for bringing about effort toward organizational objectives. People will exercise self-direction and self control in the service of objectives to which they are committed.

—Commitment to objectives is a function of the rewards associated with their achievement.

—The average human being learns, under proper conditions, not only to accept but to seek responsibility.

—The capacity to exercise a relatively high degree of imagination, ingenuity, and creativity in solving organizational problems is widely, not narrowly, distributed in the population.

—Under conditions of modern industrial life, the intellectual potential of the average human being is partially utilized.

Employees perceive Theory Y managers as sociocentric, passive and modest. This classifies Theory Y managers as people-oriented.

Unlike the Theory X behavior, understanding Theory Y behavior is easier. These managers are friendly and caring persons, often saying the right words that make people feel good. These managers fear to express their real thoughts and feelings while communicating with people. Employees often perceive these managers as idealistic/wishful thinkers, passive, self-sacrificing and self-denying. Theory Y managers, being self-righteous, are afraid to recognize high performers to avoid envy and competition. To preserve the perception of being kind-hearted, they may reward poor performers at the expense of productivity. In contrast, Theory X managers get the job done at the expense of people.

The following strategies can be helpful in working with those whom we perceive as Theory Y managers.

—Make people the most important subject during conservation.

—Organize your work and process by interacting with the people involved.

—Make sure the thrust on participation does not overshadow the need for productivity.

—Keep them informed. Make positive comments about people who help you to improve your work process.

—Learn to be more patient, tolerant and cheerful.

—Don't unload your emotional baggage under stress or schedule constraint.

—Don't use power, politics or manipulation.

—Occasionally, make them feel the world would be a better place if there were more kind-hearted people like them.

—Don't expect a reward for individual performance. Don't dwell on production and profits.

—Think positive. Learn to forgive and forget.

TQM...a Conscious Minded Attitude

Total Quality Management is a conscious-minded attitude. It means reflecting consciousness in thoughts, words and actions. Developing such an attitude would require a continuous effort of understanding the Inner-Self. It means recognizing positive qualities within ourselves and others. In the business environment, this means being conscious of customer needs and wants. To be customer driven, managers must raise their awareness about customer requirements. Managers must be able to translate and communicate customer requirements to people supporting their work processes and organizations. For continous process improvement, managers must be process-oriented. To be society-conscious, managers must raise their awareness about the potential impact of their thoughts, words and actions on the society to include product users and people in support organizations.

As you think so you become. One can reach unimaginable heights by directing the mental process toward the positive...you can be degraded to humiliation by directing the mind in a negative manner.

TQM...a Challenge for Theory X and Theory Y Managers

Neither Theory X nor Theory Y leadership behavior can influence the required cultural change for TQM. For managers, the challenge is to explore the goodness in each of these management styles. Appropriately, we must learn to combine their characteristic strengths for improvement of work processes.

For example, it may be appropriate to use Theory X approach to cause a Significant Emotional Event. Occasionally, it may help adjust the I-don't-care attitude toward improving the work-process. On the other hand, we must recognize that short-term results do not address systemic problems built into the system during a long period. For that, we should consider replacing the short-term project team with a long-term process action team (PAT) for continous process improvement. The long-term PAT must analyze the work-process flow and set up measurements and controls. This will reduce stressful situations involving people and provide opportunities to act before the process gets out of control.

Adjusting to TQM

Regardless of the management style or value system, everyone has customer/supplier relationships within and outside the organization. Developing a TQM attitude requires a continous effort by everyone to raise the consciousness in everything we do. Managers must lead by their examples. It is equally important that subordinates stop characterizing managers as entirely Theory X and Theory Y, which can lead to self-fulfilling prophecies. Subordinates must remove their crutch and search their thoughts, words and actions.

Theory X managers should use their skills and forcefulness to seek and understand customer requirements; then translate those into tasks. They should ask subordinates or supplier organizations to present the work process flow and process controls. They must know how the customer and supplier organizations control their work processes. This

will help them replace reactive management of human-control with proactive management of process-control. Theory X managers must learn to be process-oriented, and not just task-oriented. This way they can display their characteristic strengths in a positive manner. By adjusting to TQM, Theory X managers can change the perceptions of their behavior. Employees can perceive controllers as organizers, and nit-pickers as analyzers. Combativeness can change into healthy competition.

Theory Y managers need to use their modesty and politeness to seek and understand customer requirements. Then, they need to translate the requirements into tasks that can help their people grow. They must motivate the people involved in the work processes. This will help them replace reactive management of schedule-control with proactive management of process-control. Theory Y managers need to be process-oriented, while being people-oriented. This way they can display their characteristic strengths in a positive manner. By adjusting to TQM, Theory Y managers can change the perception of their behavior. Employees can perceive gullible as trustworthy, submissive as supportive, and passive as assertive.

TQM...An Intelligent Choice

As you think, so you become. One can reach unimaginable heights by directing the mental process toward the positive. On the other hand, you can be degraded to humiliation by directing the mind in a negative manner. An intelligent choice is to develop a conscious-minded attitude toward improving the *self*. What we consistently cultivate in our mind determines our character formation and our destiny. This is consistent with the cause-and-effect principle. The decision to procrastinate applying TQM could create a barrier to self-improvement. We must reduce variation among our thoughts, words and actions by daily reflection. This leads to harmony with the changing business environment.

For U.S. managers, adapting and adjusting to TQM is an opportunity to make positive changes in the way we do business.

EXECUTIVES IN CRISIS

Jeffrey Lynn Speller
(Jossey-Bass Publishers, 1989, 164 pp.)

Alcoholic, drug-abusive or mentally ill decision-makers, program managers and executives in government, industry or business are costly to their organizations. Speller, executive director of the Leadership Research Project and lecturer at Harvard University, says these disturbed leaders (hereinafter referred to as executives) "make bad decisions, irritate and frustrate their colleagues, lose sight of priorities, miss deadlines, forget important assignments, lower morale, act impulsively, and think irrationally." When an executive, troubled by addiction or mental illness goes undetected and untreated, his bad decisions are costly to the organization and can adversely affect productivity. Speller points out the cost of recruiting, hiring, training and developing a replacement for an experienced and once capable executive is significant, as are disability retirement or continuing health-care costs.

One of the principal purposes in this clearly written book is to help each reader recognize early symptoms of an impaired executive and how the latter can threaten success of a program (project) or existence of the organization. The author's Leadership Research Project is dedicated to study leadership in government, business labor and education. Clearly, Speller's main interest lies in the interface between occupational and industrial psychiatry and organizational behavior and management. He is concerned about leadership, organizational dynamics, organizational and executive stress and executive development— subjects of interest to readers of *Program Manager*.

Founder of the Cambridge Institute, a consulting firm specializing in problems of leadership, executive and employee performance, and human resources management, Speller has an M.D. degree from Harvard Medical School and an M.B.A. degree from Harvard Business School. He meets objectives he established for this book in several ways:

A principal purpose of this book is to help the reader recognize early symptoms of an impaired executive and how the latter can threaten success of an organization.

—Presents basic concepts of alcoholism, drug dependency, and mental illness and relates them to disturbed executives

—Increases reader's awareness of problems faced by an alcoholic, drug-addicted, or mentally ill executive

—Tells readers how to recognize early warning signs of an impaired executive

—Discusses how to get treatment for an impaired executive

—Explains how to deal with formerly impaired executive when he returns to work

—Instructs reader how to develop organizational strategies to deal effectively with reluctant or resistant impaired executives.

Generally speaking, Speller broadens the reader's base of knowledge and practice of human resources management.

Executives in Crisis has three sections. The first defines impaired executives, causes of alcoholism, drug abuse, and mental illness, problems of dealing with an impaired executive, and financial impact on the impaired executive and his organization.

The second section deals with problems of detecting an impaired executive and will interest readers with only a casual knowledge or understanding of their problems.

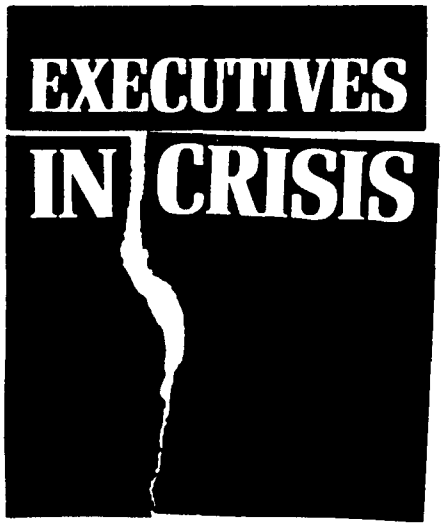
The third section describes strategies for successfully managing impaired executives and rehabilitated or recovering executives. This section suggests (a) policies and procedures for ensuring early detection, treatment and reintegration of recovering executives into the organization and (b) discusses issues associated with troubled executives.

The last chapter puts the challenge of managing an impaired executive in perspective and reflects on drawbacks and limitations to the approach the author advocates in the book.

David Acker, our reviewer, serves in the Research Directorate at the Defense Systems Management College.

The book is not intended to be a definitive work about impaired executives; however, Speller is convinced no organization can afford to ignore the possibility of alcoholism, drug abuse, and mental illness within its senior ranks. The impaired executive must be detected early, treated effectively, and reintegrated into the organization. Such an executive, not detected early, can profoundly influence and distort organizational decision-making, leadership, structure, strategy and group functioning.

Readers with little knowledge of executives in crisis, or who are concerned with helping them, will benefit



from this book. The author takes a balanced view of his subject by focusing on the behavior and psyche of the disturbed executive and emphasizing the importance of structures within the environment that are helpful in detecting symptoms and managing the disturbed persons before, during, and after treatments. Case histories and vignettes are composites of clinical material from various sources.

The author shows deep insight into clinical, psychiatric and management issues. *Executives in Crisis* is must reading for anyone caring about the health and welfare of decision-makers.

HAGAN - YOU CAN IMPROVE THOSE SUBJECTIVE ESTIMATES

(Continued from page 30)

—Don't set nominal estimate to a value too close to estimate of best case scenario.

Concluding Remarks

Making subjective estimates becomes difficult when we have little relevant experience, or when uncertainty exists among events impacting value to be estimated. In either case, the approach prescribed in this paper can reduce some biases typically associated with subjective estimates. The assumption here is that an accurate estimate is desired. In situations where estimates are based on ulterior motives (e.g., competitiveness), the presented approach is inappropriate; that is, the approach is for estimating what to expect for a value, not what it must be. Even under these circumstances we always should know what to expect.

Endnotes

1. D. Kahneman, P. Slovic, and A. Tversky compiled papers regarding this topic in *Judgment Under Uncertainty: Heuristics and Biases*, Cambridge University Press, 1982.

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5. Tversky, A. & Kahneman, D., presented the simulation heuristic at the Katz-Newcomb Lecture in Social Psycology "On the Psychology of Possible Worlds," Ann Arbor, Michigan, April, 1979.

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Whenever in this publication "man," "men," or their related pronouns appear, either as words or parts of words (other than with obvious reference to named male individuals), they have been used for literary purposes and are meant in their generic sense.

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